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ABSTRACT

The Arizona Journey Schools Program (JSP) was a two-year professional development experience whose stated purpose was to build the leadership capacity of school/community teams and establish a network of professionals to support teams as they bring about systemic change in mathematics and science teaching, learning, and assessment. This report presents the results of a summative evaluation of the program. It is organized into four main parts: (1) basics of the Journey Schools Program; (2) an assessment of the extent to which the program achieved its declared outcomes; (3) anonymous case studies illustrating the program's impact; and (4) final thoughts on the proceedings. The program's major successes include bringing together teams with both school and community-based members, building the capacity of these teams to envision and implement systemic reform in mathematics and science education at their sites, and promoting the application of this reform to all students. The JSP's shortcomings included minimal meaningful involvement of community and parent representatives, the failure to establish an Internet-based electronic network among all participating schools, and poorly defined objectives with respect to equitable reform. Appendices to the main report contain copies of essential program documents as well as rosters with contact information for actual program participants. (JRH)

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High · Desert View High · Esperanza Elementary · Sierra Middle · Sunnyside High · Coconino High · Granite Mountain Middle · Hualapai Elementary · Larkspur Elementary · Red Mountain Ranch Elementary · Sonoran Sky Elementary · Stanley Junior High · Villa de Paz Elementary · Westwood Primary · Agua Fria Union High · Arrowhead Elementary · Clarendon Elementary · Kyrene de la Mariposa Elementary · Kyrene Middle · Palmdale Traditional · Connolly Middle · Kyrene de la Colina Elementary · Kyrene de las Lomas Elementary · Kyrene del Pueblo Middle · Drew Elementary · Alpine Unified School District · Apache Middle · Lee Kornegay Junior High · Rice Elementary · Safford High/Safford Schools · Sahuarita Elementary · Sahuarita Middle · McKemy Middle · Desert Sage Elementary · Tucson Unified School District · Amphitheater Middle · Copper Creek Elementary · Cross Middle · Donaldson Elementary · Ft. Huachuca Accommodation School · Ft. Huachuca Elementary · Ft. Huachuca Middle · Ft. Huachuca Primary · Ft. Huachuca Upper Elementary · Ft. Huachuca Upper Prim

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The Arizona Journey Schools Program: A Strategy for Change

A final report to the Arizona Department of Education
submitted by the WestEd Eisenhower Regional Consortium
for Mathematics and Science Education

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October 1996

Any opinions, interpretations, or conclusions expressed in this report are those of the authors and do not necessarily reflect those of the Arizona Department of Education or Far West Laboratory (now part of WestEd). Additional copies of this report, as well as the companion document the *Arizona Journey Schools Yearsbook,* may be obtained by contacting:

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PREFACE

This report presents the results of our summative evaluation of the Arizona Journey Schools Program. It is organized into four main parts: basics of the Journey Schools Program, an assessment of the extent to which the program achieved its declared outcomes, anonymous case studies illustrating the program's impact, and our final thoughts on these proceedings. Appendices to the main report include copies of essential program documents as well as rosters with contact information for actual program participants.

In the interest of "truth in advertising," we wish to state up front that this report was prepared by individuals who are intimately familiar with the Journey Schools Program. Jerome helped conceive the program and has been integral to its implementation over the full two years. Laura joined the JSP as replacement Home Base Leader (see discussion of the "Organizational Structure" of the JSP in Part I) in September of the second year and has been involved ever since.

We recognize that such familiarity has drawbacks in terms of objective observation and evaluation. We also feel, however, that the internal nature of our relationship with the JSP affords us additional access and insights unavailable to the typical external evaluator. We have done our best to not allow our familiarity with the program and its participants to compromise the integrity of this report. Please pardon any transgressions in this regard.

Laura Laughran & Jerome Shaw
October 1996

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Coconino High School
Desert View High School
Esperanza Elementary School
Hualapai Elementary School
Lee Kornegay Junior High School
Safford Unified School District
Sierra Middle School
Sonoran Sky Elementary School
Sunnyside High School
Westwood Primary School

EXECUTIVE SUMMARY

The Arizona Journey Schools Program (JSP) was a two-year professional development experience whose stated purpose was "to build the leadership capacity of school/community teams and establish a network of professionals to support teams as they bring about systemic change in mathematics and science teaching, learning and assessment." This initiative was a joint effort of the Arizona Department of Education (ADE) in collaboration with the Eisenhower Regional Mathematics and Science Consortium of the Far West Regional Education Laboratory (FWL, now part of WestEd).

The JSP was in operation from May, 1994 through May, 1996. School involvement was based on the participation of teams that were to include the following members: (1) a principal, science coordinator, or director of curriculum and instruction; (2) two experienced classroom teachers who have demonstrated leadership in his or her school/district; (3) a parent, school board member, or community member; (4) a business and industry member, university or community college members.

JSP teams experienced a series of professional development events that addressed topics including effective mathematics and science instruction, alternative assessment, the change process, systems thinking tools, models of professional development, and grant proposal writing. In addition, the ADE sponsored two cycles of grants to JSP teams to fund professional development activities of their choice.

Thirty schools from across Arizona completed the two-year program. With respect to level, 51% were elementary, 29% were middle, and 20% were high schools. In terms of location, 73% were located in the urban centers of Flagstaff, Phoenix, and Tucson while 23% were situated in rural areas around the state.

JSP teams were organized into 6 regional clusters. Each cluster or "Home Base" was coordinated and supported by two or more "Home Base Leaders," professional educators with proven expertise in mathematics and/or science education reform who resided in the region around which the Home Base was organized.

The program's major successes include bringing together teams with both school and community-based members, building the capacity of these teams to envision and implement systemic reform in mathematics and science education at their sites, and promoting the application of this reform to all students. The JSP's shortcomings include minimal meaningful involvement of community and parent representatives, the failure to establish an Internet-based electronic network among all participating schools, and poorly-defined objectives with

respect to equitable reform. These results are detailed in relation to the program's expected outcomes in the tables below.

Outcome #1 **School leaders who can make knowledgeable decisions about effective mathematics and science education programs based upon a clear shared vision.**

Overall Achievement Rating: **LARGELY ACHIEVED**

Major Commendations	Major Considerations
• development of shared team visions • development of teams of leaders who can make effective decisions about science and mathematics education programs • positive changes including curriculum improvements in mathematics and science programs, receipt of outside grant funds, enthused teachers • fostering of team collaboration and interaction	• wide discrepancies among clarity of visions • limited relevance of outcome for parent members

Outcome #2 **Community and parental involvement and support for mathematics and science education programs.**

Overall Achievement Rating: **SCARCELY ACHIEVED**

Major Commendations	Major Considerations
• community and parent representatives on most teams at one time or another • business donations • some community and parent representatives assisting in classrooms	• limited success in maintaining community/parent representatives on teams • no defined role for community/parent representatives • minimal JSP events that addressed this outcome

Outcome #3 **A network among schools, colleges, universities and the Arizona Department of Education for supporting change in schools.**

Overall Achievement Rating: **PARTIALLY ACHIEVED**

Major Commendations	Major Considerations
• significant increase in contacts with professionals in the field of science and mathematics education • increased communication within departments, schools, and districts • Internet access for schools within the metropolitan Phoenix area	• failure to follow through on Internet access for teams outside of the metropolitan Phoenix area • very limited networking with universities, colleges, and the Arizona Department of Education

Outcome #4	**Access and support for all students to quality mathematics and science instructional materials in classes taught by skilled and knowledgeable teachers.**

Overall Achievement Rating: **PARTIALLY ACHIEVED**

Major Commendations	Major Considerations
• teachers with enhanced abilities to provide quality instruction in mathematics and science • schools that have implemented new, better quality mathematics and science instructional materials • progress in providing access and support for all students to quality mathematics and science instruction	• limited success in exporting new materials and skills beyond the team members' classrooms • no means to measure access and support for students • too short a time for effects on students to be evident

Lessons learned from the JSP experience include the following:

1. Systemic change can be produced effectively by using a diversified (e.g., teachers, administrators, parents, business members) team approach.

2. Change that is significant and long-lasting must be given time to develop.

3. Professional development activities should include affective rewards as well as cognitive gains.

4. Exercise caution when making promises that involve high tech equipment.

5. Leadership distributed within and across agencies can provide continuity through unanticipated personnel changes.

Suggestions for improving the JSP and similar initiatives include:

From a CONCEPTUAL Perspective

- Develop outcomes that are more clearly worded and narrowly focused.
- Identify indicators for intended outcomes at the start of the program.
- Carefully think through the expected commitment from and intended benefit for parents and other community members.

From an OPERATIONAL Perspective

- Consider contracting with a commercial vendor for high tech services such as Internet access.
- Provide professional development experiences targeted at the interests and needs of non-educator participants.
- Acknowledge and support the efforts of "specialized" team members.

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Part I. The Journey Schools Story

Introduction

This report documents the activities and achievements of the Arizona Journey Schools Program (JSP) which was in operation from May, 1994 through May, 1996. The following background information on the origin, structure, and operation of the JSP provides the prelude to evaluative commentary made in subsequent sections.

What was the Journey Schools Program?

The Journey Schools Program was a two-year professional development experience for school teams. It focused on the systemic improvement of K-12 mathematics and science education in Arizona. This initiative was a joint effort of the Arizona Department of Education (ADE) in collaboration with the Eisenhower Regional Mathematics and Science Consortium[1] at Far West Laboratory (FWL, now part of WestEd). The JSP's stated purpose was "to build the leadership capacity of school/community teams and establish a network of professionals to support teams as they bring about systemic change in mathematics and science teaching, learning and assessment" (JSP Application packet, Appendix A). This purpose was further clarified in terms of the mission, goals, and outcomes statements reproduced in Figure 1.

What was the origin of the Journey Schools Program?

The Journey Schools Program was conceived in the fall of 1993 by Linda Jaslow and Michael Lang, ADE's mathematics and science specialists, respectively, in conjunction with Ann Muench and Jerome Shaw, mathematics and science specialists, respectively, with FWL's Eisenhower Regional Consortium. Key supporters in this process were ADE's Steve Merrill (Title II program officer) and Sharon Bolster (academic support unit manager).

The JSP was an outgrowth of previous ADE-sponsored annual summer "academies" at which teachers learned about the latest innovations in mathematics and science curriculum and instruction. Participant feedback, personal experiences, and reflection led the above core organizers to become dissatisfied with the limited impact of the "academy" approach. Together, they designed an alternative that was more sustained—lasting for more than one week—and systemic—involving more than just teachers and exemplary curricula. This new program, launched in the spring of 1994, was officially titled the "Arizona Mathematics and Science Academy and Institutes for Journey Schools." Over time, it became known simply as the "Journey Schools Program."

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[1] Eisenhower Regional Consortia operate with funding from the U. S. Department of Education to support improvement in mathematics and science education throughout the nation. The Consortium at Far West Laboratory serves the states of Arizona, California, Nevada, and Utah.

Arizona Mathematics and Science Academy and Institutes for Journey Schools

Mission

The Journey Schools Program provides support and professional development experience to enable schools, with community partners, to create a culture of valuing and supporting mathematics and science education for **all** students.

Goals

- Develop a clear understanding of effective mathematics and science education.
- Build the leadership capacity of school teams to reform systemically mathematics and science education programs.
- Create a human resource network of support among school teams and science and mathematics educational leaders.
- Develop an understanding of how the change process affects the implementation of reform efforts.
- Apply the use of systemic tools in planning, monitoring and evaluating the change process.

Outcomes

1. School leaders who can make knowledgeable decisions about effective mathematics and science education programs based upon a clear shared vision.
2. Community and parental involvement and support for mathematics and science education programs.
3. A network among schools, colleges, universities, and the Arizona Department of Education for supporting change in schools.
4. Access and support for all students to quality mathematics and science instructional materials in classes taught by skilled and knowledgeable teachers.

Figure 1. Journey Schools Program Mission, Goals, and Outcomes

What is a "Journey School"?

The program's original application packet (see Appendix A) describes a "Journey School" as "a school committed to systemically changing its mathematics and science education programs, so that all students may be successful. A Journey School has a team consisting of a principal, teachers, parents, and community members committed to reforming mathematics and science education. The team will be involved in the planning, implementation and evaluation of the science and mathematics program."

How many Journey Schools were there and where are they located?

Originally, 33 schools from across Arizona were accepted into the JSP (see Figure 2). The majority (51%) of JSP schools were at the elementary level followed by ten middle (29%) and seven high schools (20%) (see Table 1). Most Journey Schools were in the urban centers of Phoenix and Tucson (58% and 12%, respectively) with the remainder (30%) located in Flagstaff and more rural sites (see Table 2). Over the course of the program, one team expanded to include an entire district while three other teams dropped out. For practical purposes, the JSP concluded its two year term with 30 participating schools.

What was the ORGANIZATIONAL structure of the JSP?

From an organizational perspective, the JSP was designed to facilitate the "support" called for in the program's mission statement (see Figure 1). This support was built-in in two ways: (1) by establishing teams, rather than individuals, as the main participatory unit, and (2) by providing assistance to these teams from a distributed leadership base—ADE, FWL and a group known as "Home Base Leaders" or HBLs (see Figure 3).

The JSP was organized around the concept of a *team* approach to school change. Consequently, the program's central organizing unit was the school team, whose membership reflected the program's systemic approach to change. As stated in the application packet, JSP teams were to be composed of a maximum of seven people, including at least: (1) a principal, science coordinator, or director of curriculum and instruction; (2) two experienced classroom teachers who have demonstrated leadership in his or her school/district; (3) a parent, school board member, or community member; (4) a business and industry member, university or community college members (see Appendix A). The packet notes an exception for rural schools whose teams could number less than five as long as all groups were represented (e.g., a parent also being a business person).

In practice, most original teams did meet these criteria. Moreover, the program encouraged teams to expand their number of members as part of carrying out the change process. Also, the terms "team" and "school" became somewhat

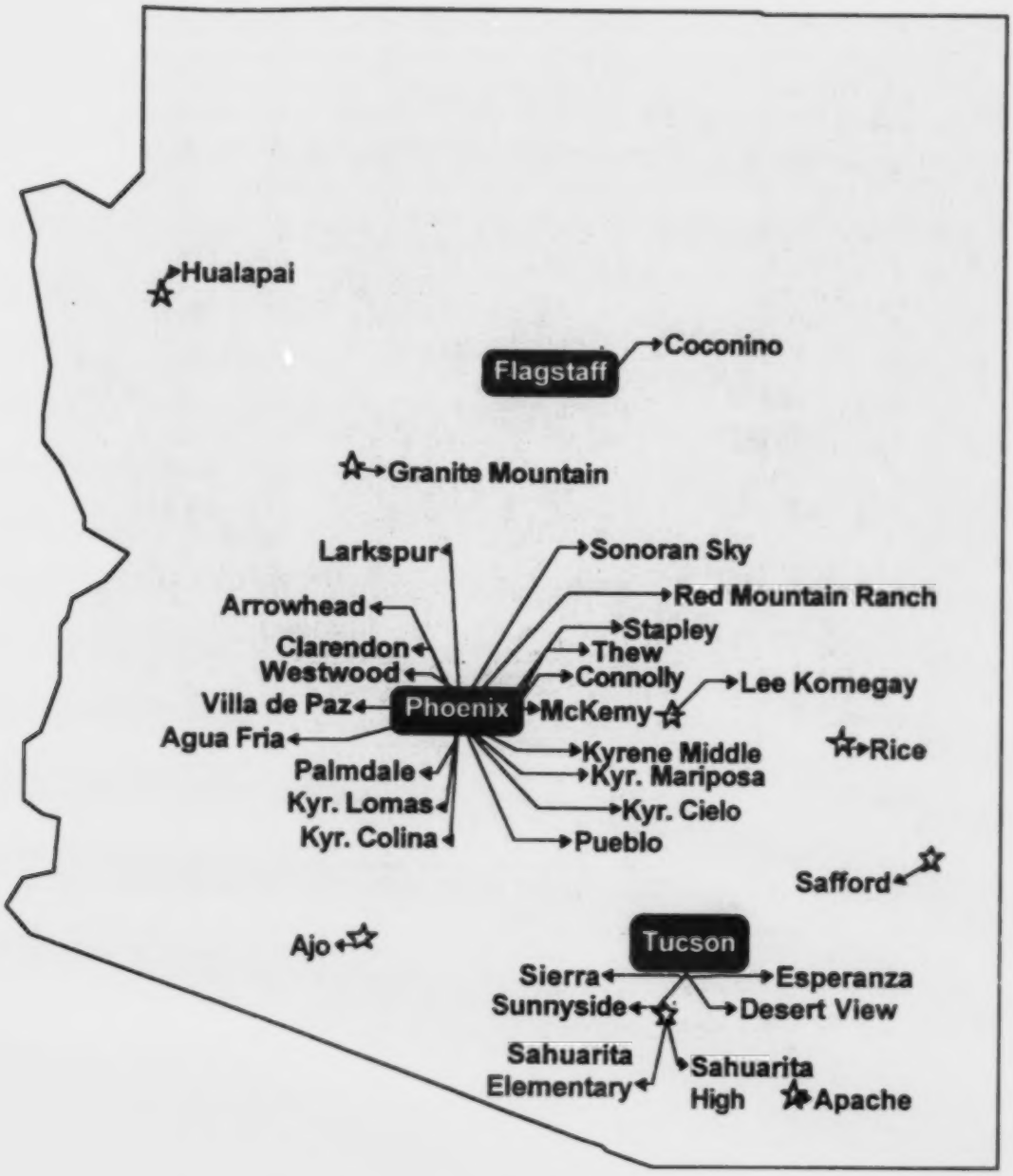


Figure 2. Map of Journey Schools Program Sites

Elementary	Middle	High	Total
18 (51%)	10 (29%)	7 (20%)	35* (100%)

* Total exceeds 33, which is the actual number of schools involved in the program, due to triple counting of one K-12 unified school district team.

Table 1. Journey Schools Program Teams by Level

Flagstaff	Phoenix	Tucson	Other	Total
1 (3%)	19 (58%)	4 (12%)	9 (27%)	33 (100%)

Table 2. Journey Schools Program Teams by Location

	Home Bases					
	1	2	3	4	5	6
Number of Schools	3	6	6	7	7	4
Location	Flagstaff/ Northern Rural	Phoenix	Phoenix	Phoenix	Central/ Southern Rural	Tucson

Table 3. Journey Schools Program Home Bases

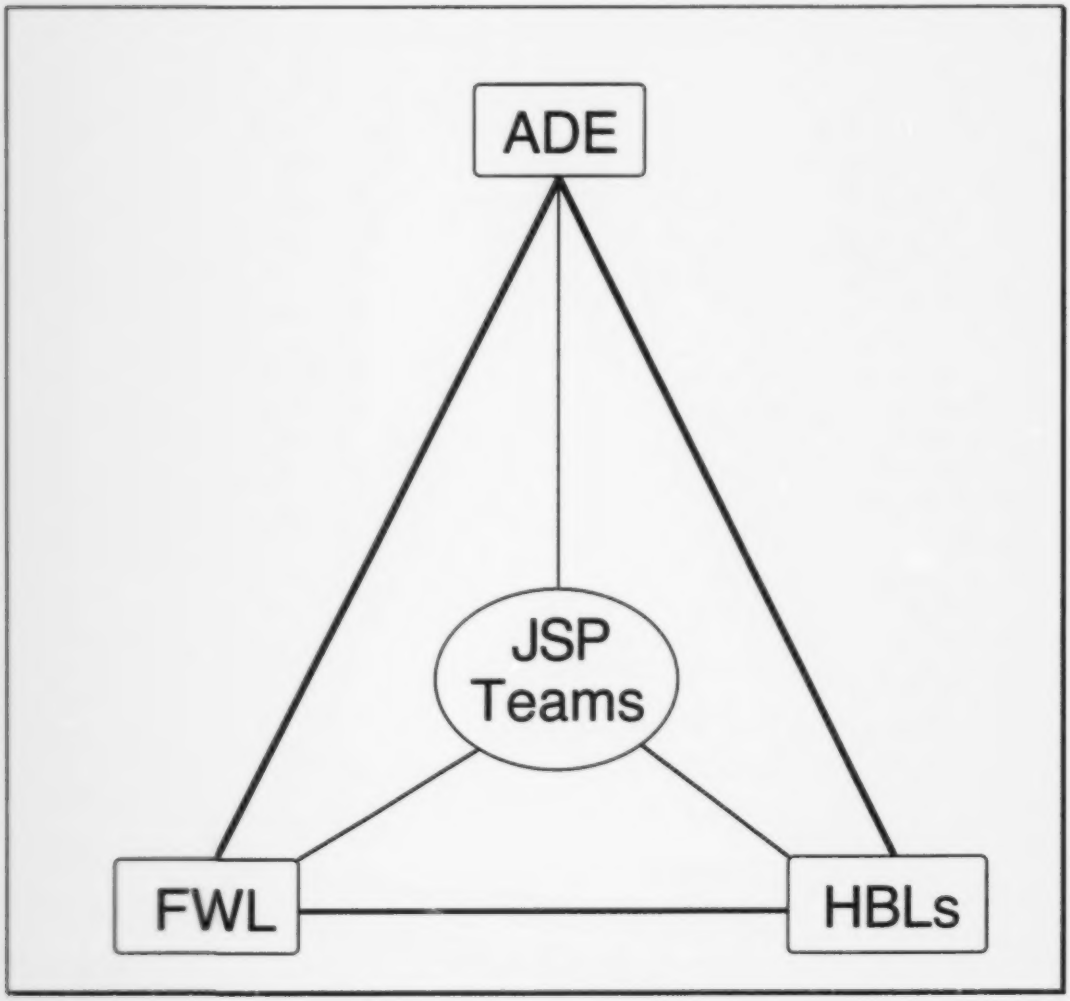


Figure 3. Journey Schools Program Organizational Structure

synonymous over the course of the program. While most JSP teams were in fact single schools (i.e., elementary, middle/junior high or high), one team from a rural area did encompass an entire district.

JSP teams were grouped into "Home Bases" according to relative geographic proximity. Altogether, there were six Home Bases composed of three to six schools each (see Table 3). Individual Home Bases were coordinated and supported by two or more "Home Base Leaders," professional educators with proven expertise in mathematics and/or science education reform who resided in the region around which the Home Base was organized (see Home Base Leader Roster in Appendix D).

Home Base Leaders, alternately known as JSP "Faculty," provided localized assistance to JSP Teams to supplement the more centralized support from the program's core staff (originally Jaslow, Lang, Merrill, Muench, and Shaw). These staff and the JSP Faculty provided the basis of the support network of professionals called for in the program's purpose statement quoted on page one.

What is the PROGRAMMATIC structure of the JSP?

JSP program offerings were designed to provide the "professional development experiences" called for in the program's mission statement (see again Figure 1). The core of these experiences was a series of topical events (e.g., on classroom assessment) spread over the two-year duration of the program (see Table 4). The intent was to give participants time to absorb and apply the knowledge and skills introduced at these events.

This series of professional development events was preceded by a program *orientation* in May 1994. At this meeting, representatives from schools accepted into the JSP were introduced to JSP staff. The meeting addressed program components and commitments and clarified the difference between the JSP and previous ADE math/science improvement efforts. At the end of the two-year process, the JSP concluded with a *graduation* ceremony in May 1996 at which summative evaluation data were gathered and team and program accomplishments were celebrated. Both the orientation and graduation were single day events held at a public university in the metropolitan Phoenix area.

The first JSP professional development event was a somewhat traditional "academy" in the summer of 1994 that focused on curricular materials associated with effective mathematics and science instruction. In a departure from previous academies, this event also sought to prepare participants for their role as change agents by having them build a vision for systemic change and engage in activities related to understanding the change process itself.

This academy was followed by a series of events that chronologically focused on systems thinking, professional development, the Internet, classroom assessment

Type	Title	Focus
Summer Academy (6 days, summer 1994)	*Arizona Mathematics and Science Academy*	• building a vision for systemic change • understanding effective mathematics and science instruction • understanding and engaging in the change process
Fall Focus Institute (3 days, fall 1994)	*Systems Thinking Planning Tools*	• applying systems thinking tools to educational change
Winter Focus Institute (2 days, winter 1995)	*Professional Development*	• exploring characteristics of and models for effective professional development
Summer Institute (4 days, summer 1995)	*Internet Training*	• accessing the Internet, creating web sites
Focus Group Meeting (1 day, summer 1995)	*Principal's Meeting*	• identifying needs of and support for principals
Fall Focus Institute (3 days, fall 1995)	*Classroom Assessment*	• exploring concepts, issues and practices related to implementing alternative assessment at the classroom level
Winter Focus Institute (2 days, winter 1996)	*Grant Proposal Writing*	• exploring the basics of grant proposal writing and applying them to the 1996 Journey Schools Professional Development Grant Program (funded by the Arizona Department of Education)

Table 4. Journey Schools Program Professional Development Events

and grant proposal writing (see again Table 4). A critical element during all of these events was time spent, usually on a daily basis, meeting as Home Bases to facilitate team processing of content from the presentations, especially in relation to their own school contexts (for an example see Figure 4).

At the conclusion of each professional development event and at the JSP graduation, individual JSP teams were provided with a "goody box" of resource materials. These materials included single copies of print and electronic resources relevant to the event's focus (e.g., the national mathematics and science education standards, a database of mathematics and science alternative assessments in hard copy and on diskette, a resource binder on professional development in mathematics and science). Each team thus acquired its own comprehensive reference library over the course of the program.

JSP professional development events included presentations in a variety of formats (e.g., hands-on workshops, keynote addresses, large group discussions) provided by either JSP staff, Home Base Leaders or, as appropriate, outside consultants. These events or "Institutes" were typically held in a central location, most often the metropolitan Phoenix area. JSP events usually spanned two to three consecutive weekdays with substitute teacher costs covered by the ADE. Exceptions to this format included the six-day Academy in 1994 and the four-day Internet training in 1995. These events where held at university campuses in Tucson and metropolitan Phoenix, respectively.

While following the shorter multi-day format, the 1996 Winter Focus Institute on grant proposal writing deviated from the central location feature of most JSP events. In the interest of providing more personalized assistance, this event was held regionally in three locations around the state: Flagstaff, metropolitan Phoenix and Tucson. Moreover, the two days of this event were separated by a few weeks to give participants an opportunity to draft a proposal and receive feedback and further guidance on the second day.

The Grant Proposal Writing Institute was designed to meet two objectives: (1) to provide teams with a mechanism for sustaining their activities once the JSP ended, and (2) to help teams respond to ADE's professional development grant program exclusively for JSP schools. The ADE sponsored two such grant cycles, one each in the spring of 1995 and 1996. Applications for these grants were to be tied to team goals and reflect learnings from JSP events. For example, spring 1995 grant applications were to apply information on models of effective professional development presented at the winter 1995 focus institute. Similarly, the proposals submitted for the spring 1996 grant program were drafted during the winter 1996 institute.

A unifying feature of the JSP was the team portfolio (see Appendix B). These portfolios were designed with four purposes in mind: (1) supporting the goals of the JSP, (2) supporting the goals of the Journey School teams, (3) communicating

1995 FALL FOCUS INSTITUTE on CLASSROOM ASSESSMENT At-A-Glance

	DAY 1 Tues. Oct. 17	DAY 2 Wed. Oct. 18	DAY 3 Thurs. Oct. 19
7:30 - 8:00 AM	Registration & Ctl Breakfast	Continental Breakfast	Continental Breakfast
8:00 - 10:00 AM	**General Session #1:** • Welcome, introductions, overview • Keynote Address: Assessment and the JSP: A Balanced Approach	**Workshop Session #3** • Aligning Curriculum, Instruction and Assessment (Act. 2.4) • Introduction to Performance Criteria (Act. 2.9)	**Workshop Session #5** • Assessment and Grading (Act. 6.1)
10:00 - 10:15 AM	**BREAK**	**BREAK**	**BREAK**
10:15 - 12:15 PM	**Workshop Session #1** • Assessment Vocabulary (Act 2.3) • Mathematics and Science National Assessment Standards	**Workshop Session #4** • Performance Tasks (Act. 4.1) • Performance Criteria (Act. 4.3)	**General Session #3** • Academic Summit Report • Program Evaluation
12:15 - 1:15 PM	**BALLROOM LUNCH**	**BALLROOM LUNCH**	**BOX LUNCH**
1:15 - 2:30 PM	**Workshop Session #2** • Assessment Design (Act. 2.5)	**General Session #2** • Assessment in Context ("Effective Assessment" video and guest speakers from Chinle)	**Home Base Meeting #3** • Continue work on current portfolio entry • Team processing • FFI evaluations
2:30 - 2:45 PM	**BREAK**	**BREAK**	**BREAK**
2:45 - 4:00 PM	**Home Base Meeting #1** • Collect previous portfolio entry • Review current portfolio entry • Discuss connections between FFI and WFI	**Home Base Meeting #2** • Continue work on current portfolio entry • Team processing	**General Session #4** • Looking back (FFI accomplishments) and looking forward (WFI options) • Thank you's
4:00 - 5:00 PM	Faculty Meeting	Faculty Meeting	Faculty Meeting

Figure 4. "Classroom Assessment Institute" Schedule of Events, an example of a typical institute format.

accomplishments and achievements, and (4) evaluating the JSP. Each team was to identify an "editor" to coordinate the continuing development of its portfolio.

Teams began their portfolios with a "contextual information" assignment given at the May, 1994 orientation. This entry asked teams to create profiles of individual team members, the school site, and the local community. The final portfolio entry asked teams to reflect on their accomplishments over the two years of the program and project future actions. These entries were compiled into the JSP *Yearsbook*, a companion document to this report (available on request from WestEd).

An unifying theme throughout the portfolio was the team vision for the improvement of mathematics and science education at their school (see examples on page 15). Originally developed at the 1994 summer Academy, teams took their visions back to their local sites and revised them with an expanded cohort of team members. Subsequent professional development experiences were presented as occasions to "feed" these visions. For example, systems thinking tools gained during the 1994 Fall Focus Institute were to be applied to components of their vision to help teams realistically plan for change in those components.

What is the future of the JSP?

At the time of publication, the future of the JSP is uncertain. ADE staff have recommended that the program continue and FWL/WestEd is willing to support such an effort. Program continuity may be hampered by the fact that Jaslow, Lang, and Merrill all have departed from the ADE.

Nevertheless, the Journey Schools story will live on the hearts, minds and actions of those touched by the program. The remainder of this report gives an indication of the nature of those feelings and the types of action that this program engendered.

Part II. Achievement of Outcomes

Introduction

In this section we present our findings regarding the extent to which the Journey Schools Program achieved its four outcomes previously listed in Figure 1. Information in this section comes from the following sources:

• *Portfolio Entries*
JSP teams developed portfolios documenting their journey over the program's two year duration (see Appendix B). The first entry provided contextual information such as profiles of the team's members, the school site and the surrounding community. Subsequent entries asked teams to apply the knowledge and skills gained as part of a JSP professional development event. Additional entries served as progress reports that gave evidence of activities that were undertaken as a result of their participation in the JSP.

• *Yearsbook Entries*
As a final portfolio entry, JSP teams summarized their experiences with the program. This entry provided the following information: the team's current vision/mission/goals, a listing of the team's present and past members and their roles, highlights of their journey, plans for the future and lessons learned. These entries were compiled into a separate document known as the *Arizona Journey Schools Program Yearsbook* (available from WestEd).

• *Institute Evaluations*
Before leaving each JSP professional development event, participants were asked to complete a short evaluation form. Information typically requested included a rating of the quality and/or usefulness of the event, ways in which the institute's activities helped the team, how activities could have been more helpful and plans for using the knowledge and skills gained during the institute (see sample in Appendix C).

• *Site Visits*
During the months of April, May and June, 1996, three evaluators visited ten participating JSP schools. The evaluators included the two authors of this report and a JSP core staff member. The sites visited were chosen to represent the range of levels and diverse locations of schools in the JSP. In addition to a K-12 unified district, visits were made to four elementary, two middle and three high schools. The majority (60%) of these schools were located in the urban areas of metropolitan Phoenix and Tucson. Three of the remaining sites were in rural areas around the state and the fourth was in Flagstaff. Site visits included observations of and interviews with both JSP and non-JSP team members. Interview questions were constructed around the JSP's stated mission, goals, and outcomes (see interview protocols in Appendix C).

• *Graduation Evaluations*

The JSP May 1996 graduation event was attended by members from 26 of the 30 currently participating JSP teams. These representatives responded to two evaluation formats: an interactive group process and an individual questionnaire (see "Activity 14" and "Individual Evaluation Form" in Appendix C). The group process gathered data regarding specific aspects of the JSP (e.g., team possession of a clear vision). Respondents to the questionnaire could address those same issues. As a main focus, however, the questionnaire asked respondents to identify: (1) three things that the JSP had done well, (2) one thing upon which the JSP could improve and how it might do so, and (3) any other comments.

• *Telephone Interviews*

In June 1996, one of the authors conducted telephone interviews with JSP team members from two of the three schools that dropped out of the program. Respondents provided information as to why their team left the program and what, if anything, they felt was of value in the JSP.

• *Program Documents*

Additional information was gathered from JSP documents such as planning meeting agendas and minutes and the organizational and resource material that accompanied each professional development event.

Data from the above seven sources were used to assess the extent to which the JSP achieved its stated outcomes. Each of the four outcomes is discussed separately in the following format:

Outcome Statement:	verbatim re-statement of the outcome
Overall Achievement Rating:	a global appraisal as to whether the outcome was scarcely, partially or largely achieved
Major Commendations:	bulleted highlights of positive accomplishments
Major Considerations:	bulleted highlights of areas for improvement
Indicators:	detailed presentation of the data regarding the outcome
Analysis:	summative discussion of the meaning of the data

Outcome #1 School leaders who can make knowledgeable decisions about effective mathematics and science education programs based upon a clear shared vision.

"With all the exposure we have had to NCTM standards, National Science Education Standards, assessment practices, and new practices in instructional delivery, and with my experience in being a math mentor and science enthusiast for my school, I feel very confident about making decisions about effective math and science programs."

Overall Achievement Rating

Scarcely Achieved	Partially Achieved	**Largely Achieved**

Major Commendations

- development of shared team visions
- development of teams of leaders who can make effective decisions about science and mathematics education programs
- positive changes including curriculum improvements in mathematics and science programs, receipt of outside grant funds, enthused teachers
- fostering of team collaboration and interaction

Major Considerations

- wide discrepancies among clarity of visions
- limited relevance of outcome for parent members

Indicators

As the opening quotation illustrates, this is a complex outcome. We therefore have divided it into two sub-outcomes: (a) possession of a clear shared vision, and (b) ability to make knowledgeable decisions about effective mathematics and science education. Each of these sub-outcomes is discussed separately in the next two sections. The interconnectedness of these sub-outcomes and the success of the JSP in achieving the larger, integrated outcome are discussed in the analysis section beginning on page 18.

Outcome 1a **Possession of a Clear Shared Vision**

"Our shared vision is clear and is broadening to encompass more and allow us to flexibly handle change, setbacks, revisions, etc."

Two primary requirements of the JSP were that applicants form school teams and that each team develop its own vision of effective mathematics and science education at their site. Teams first created their vision at the summer 1994 Academy and then were encouraged to revisit and refine this vision until the vision was clear to and supported by all the team's members.

Depending on the data source, the JSP was moderately to highly successful in attaining this sub-outcome. According to responses by individuals attending the JSP graduation event, nearly all JSP teams had a clear shared vision. However, a review of the stated visions in portfolio and *Yearsbook* entries frequently reveals a broad range of clarity, at least as expressed in those documents. See, for example, the sample visions shared below:

- *"to build a learning community in which all students experience real-life situations which integrate curriculum areas to enable them to become problem solvers, risk takers, and adapters to inevitable change; to create an environment that provides instruction in and access to technology."*
  This is one of the clearer vision statements.

- *"to energize math and science for all students, teachers, parents, and for the community."*
  This sounds rather broad but the team goes on to state some specifics. The school seeks to create a "community of learners" by making the classrooms places of collaboration and by taking learning into the community. One of their paths to achieving this vision is to integrate mathematics and science and to make mathematics and science learning "meaningful" by connecting it to students' everyday lives.

- "[to develop] *a science program that is meaningful, useful, and fun for students. The program will stimulate curiosity, encourage intellectual honesty, and be intrinsically rewarding."*
  These statements address strong goals but show no indications of how the team plans to achieve the goal.

- *"to provide equity and empowerment to* all *students."*
  This is a truly global, but vague, vision.

About half the teams iterated clear shared visions like the first two examples above. The remaining teams stated their visions in much vaguer language. In

each case the teams with vague visions made broad, general statements and neglected to provide details suggesting how they planned to achieve the vision.

A possible reason for the frequency of vaguely-stated visions is that the JSP leadership stressed the process of creating the vision more than they stressed the actual product. Teams were taken through a visioning exercise during which they first individually, then collectively, brainstormed their ideal school. As part of the processing of these original visions, teams were told that the test of a vision is not in the statement but in the *directional force* it gives the organization.

Team actions indicate that they focused on producing this directional force. After the summer 1994 Academy teams returned to their home sites and pursued courses of action. Some of the myriad of actions that were initiated included:

- presentations to other school faculty, parents and the school board,
- recruitment of additional team members,
- training of teachers in new curriculum and new teaching strategies,
- purchase of Internet hardware, and
- seeking of outside funding.

This focus on the process of actively working together to accomplish something may account for the fact that despite the existence of many vaguely stated team visions, nearly all the people who came to graduation and completed individual questionnaire that their team indeed had a clear shared vision. The vast majority of responses (64 of 69, or 85%) to the group process question asking, "Do you feel your team has a clear shared vision?" were "yes." Some, however, qualified their response with comments such as, "I think the vision changes as one accomplishes come of the goals. It becomes clearer in some areas and fuzzier in areas that need work," and "The vision has become clearer over time but it still is evolving." These statements support the view that teams are focusing on the vision-making *process* rather than the product.

While the clarity of the visions vary, all are shared. Individuals were unanimous in stating that the vision their team developed was shared by other JSP team members. Some team members, however, were concerned that the vision was not shared by other faculty and staff at their schools. Such statements may indicate that these teams are having a difficult time promoting systemic change, i.e., exporting changes in science and mathematics education beyond the classrooms of the team members.

Outcome 1b **Ability to Make Knowledgeable Decisions about Effective Mathematics and Science Education Programs**

"The JSP really helped me become a more effective decision-maker in regards to math/science decisions."

The JSP leadership defined effective mathematics and science education as programs and actions that support the current direction of educational reform. Effective education, according to national proponents of reform, should be inclusive and standards-based. The curriculum should have a constructivist-based foundation. Teaching strategies should include manipulatives for mathematics and hands-on activities for science, an inquiry format, cooperative classroom structures, inclusion of real-life problem solving, the use of technology, and assessments that are authentic. JSP professional development events stressed these factors as well as leadership-building activities.

Nearly all respondents to the graduation interactive group process (55 of 58, or 95%) felt very capable of making knowledgeable decisions about effective mathematics and science programs. They viewed their participation in the JSP as providing enhancement and refinement of already existing abilities. The most frequently cited influence with respect to such enhancement was the opportunity for professional development, including the various JSP events listed in Table 4 on page 8. Other influences included team collaboration, exposure to new ideas at JSP events, JSP support, access to new materials and resources, and networking with other schools and teachers.

The majority of responses to the individual questionnaire (78 of 112, or 70%) commented that enhancing their decision-making abilities in the realm of mathematics and/or science education was one of the JSP's greatest successes. Individuals also felt that their early professional training, many years of teaching experience, experience on committees (such as those for curriculum development and textbook adoption), and additional training at the district level had developed their decision-making abilities.

Only 3 of the 58 group process respondents (5%) did not feel able to make knowledgeable decisions about effective mathematics and science education programs. At least one of these respondents was a parent who felt this was the teacher's role rather than the parent's role.

Portfolio entries illuminate some of the actions and events that occurred as a result of JSP-influenced decision making. Thirty three percent (10 of 30 schools) have adopted new instructional materials in science and mathematics that use pedagogy which aligns with currently promoted practices, such as the use of hands-on activities, constructivist theory, etc. Additionally, 11 schools custom-

designed their own curricula and 10 schools used new curriculum materials to which they had access but had not implemented in the past.

After each JSP professional development event, teams returned to their home schools and districts and organized professional development workshops for their colleagues at which technology was a popular topic. About 63% of schools (19 of 30) offered training in how to use computers and other technologies in instruction. During these workshops, participants were shown how to use particular science and mathematics software programs to enhance existing curriculum and how to access the Internet.

Another frequently cited workshop focus involved training in and implementation of hands-on science and mathematics activities. According to portfolio entries, at least 60% of schools (18 of 30) arranged for such workshops. Some of these sessions were based on existing curricula while others focused on developing new materials. Other workshop topics included the use of assessment tools, training on cooperative learning, critical thinking, national mathematics and science standards, and creation of integrated mathematics, science, and technology units.

Teams also sought outside support for mathematics and science programs and were effective in these efforts. At least ten schools (33%) received money or equipment/supplies from granting agencies and businesses such as Intel, Lockheed, McDonnell Douglas, MicroAge, Target, and US West. One team, for example, received funds from both the Arizona Heritage Foundation—to develop an outdoor learning lab and demonstration project that integrated subject areas—and the Arizona Environmental Education Office—to develop an integrated environmental curriculum for sixth graders. Another team received money from their Parent Teacher Committee as well as contributions from a business. Teams used the grant funds to arrange additional workshops, purchase equipment and supplies, and offer mini-grants to colleagues who wanted to try new teaching strategies.

JSP team members have taken their enhanced decision-making skills beyond the school arena. JSP team members serve on committees that influence district directions in mathematics, science, and technology. They even have influenced statewide science and mathematics education decisions because, as one JSP participant put it, "the presence of JSP participants on many of the state education committees has created a common frame of reference from which to consider committee actions and interactions."

Analysis

Overall, the JSP unquestionably achieved the outcome of developing school leaders who can make knowledgeable decisions about effective mathematics and

science education program based upon a clear shared vision. The program accomplished this outcome by enhancing team members' knowledge and skills in regard to effective science and mathematics education via a series of professional development events and by requiring and supporting team collaboration as the basis for promoting change in schools. According to one participant, "The JSP provided the most thorough staff development I have ever been involved in. Never have I felt more a part of the team instead of outside looking in which happens at most staff developments." The effectiveness of JSP teams' collaboration can be surmised by the many accomplishments described above.

Numerous examples exist of changes that actually are occurring at schools as a result of the actions by participants whose leadership abilities were enhanced by the JSP. Site visits by the evaluation team revealed many enthused teachers who were changing to more hands-on instruction with more use of technology and students who were actively enjoying hands-on mathematics and science learning. Thus, the activities of the JSP teams at their home schools indicate that team members are leaders who indeed can make knowledgeable decisions about effective mathematics and science programs.

As this outcome illustrates, the JSP was particularly successful in developing *teams* of leaders who can make effective decisions about science and mathematics education programs. By requiring team collaboration, the JSP created a cadre of leaders who spearheaded movements to improve mathematics and science education within their schools or districts. On individual questionnaires completed at graduation, 28 of 112 respondents (25%) specifically stated that JSP-fostered team-building and collaboration were very important to the success they had achieved in creating change at their schools.

Two factors contributed to the JSP's success in fostering collaborative teams. First, the JSP leadership required schools to form teams and required the teams to develop a vision of effective mathematics and science education at their site. While some of the team members already were leaders in their schools, others were recruited because they expressed an interest in or desire to change the present status of mathematics and science education at their schools. Working together to create a vision apparently helped the teams to gel into a cohesive unit with a common goal. This is evidenced by the number and quality of team-led events at their home sites (some of which are described above in the Indicators section).

A second factor that was crucial to developing team collaboration and promoting effective decision-making was the two-year format of the JSP. Team members stated that the lengthy time commitment of the JSP provided opportunity for follow through to better facilitate change and allowed for far greater growth. Individual comments included, "The JSP provided so many opportunities over a very extended amount of time that we as a team were able to accomplish

something and see results," and "The JSP provided more follow up and a process for a continuing program."

Finally, the amount of time spent together enhanced team collaboration. Some of this time together occurred at the individual schools. Additionally, at the six day Academy in Tucson, teams lived close together in dorm rooms and teams were given time for meeting during subsequent professional development events. Another period of time that one team found particularly valuable were the many hours spent together car pooling to and from these events.

Outcome #2 Community and parental involvement and support for mathematics and science education programs.

"A $60,000 business partnership donation would not have happened without the JSP."

Overall Achievement Rating

Scarcely Achieved	Partially Achieved	Largely Achieved

Major Commendations

- community and parent representatives on most teams at one time or another
- business donations
- some community and parent representatives assisting in classrooms

Major Considerations

- limited success in maintaining community/parent representatives on teams
- no defined role for community/parent representatives
- minimal JSP events that addressed this outcome

Indicators

The JSP's strongest gesture toward community and parental involvement and support for mathematics and science education programs was the requirement that JSP teams include as members community representatives such as parents, school board members, and representatives from local business/industry or community colleges and universities. Additionally, a separate session was held for parents, business partners, and principals at the 1994 summer Academy. This session was conducted by an external consultant, Ron Gaetano, who discussed roles and strategies for involvement of parents and community representatives. However, the outcome lacked follow up by both the teams and the JSP leadership.

Although a requirement on the original application, community/parent representation on JSP teams was not strictly enforced. Team *Yearsbook* entries are the most comprehensive source of information in this regard. As part of their

entry, teams were requested to include a list of present and past team members and identify their roles. Of the 26 *Yearsbook* entries submitted, 10 teams (38%) listed no community/parent representative, either current or departed. Seven teams (27%) listed community/parent representatives as past members only. Including 5 teams with two or more such members, a total of 9 teams (35%) listed current community/parent representatives. On one of these teams, the sole community/parent representative was also a teacher at the school. Thus, only 8 teams (31%) listed current, non-school site employed community/parent members.

As the above figures indicate, several teams found it difficult to retain their community/parent representatives. Teams gave several reasons for this problem. At one school, the business team member had difficulty taking time off for JSP events. At another school, the parent was frustrated at the institutes and questioned her contribution there. The business/parent member (same person) of another team got a job and decided that the JSP was too much of a time commitment to continue. On a fourth team the parent member got a teaching job at another school.

Teams that maintained community/parent representation received a number of benefits. Several teams stated that the mere requirement of including such representatives as team members increased the amount and quality of support their science and mathematics programs received from these groups. "By making it a part of the team, communication was guaranteed," was one team member's statement. Another said, "Our school site council (parents/community/staff) is now feeling things are open to their participating in school improvement." Still another felt, "The JSP requirement that teams include parents and business representatives provided the initiative to involve these stakeholders." Apparently, for these schools, the acts of opening communication with parents and the community and making them feel welcome in the schools were significant events.

Those teams that had business representatives frequently found this connection to be a direct link to receiving money or equipment from the business this member represented. Four teams made reference to this link in their portfolio entries. Businesses that contributed to schools as a result of the schools' involvement in the JSP include Intel, Lockheed, McDonnell Douglas, MicroAge, Target, and US West.

Many teams initiated their own efforts to expand the presence of parents and the community in their schools. One popular method that team members used to increase community/parent involvement was to sponsor family nights in the areas of mathematics, science, and/or technology at which students and their families were invited to participate in various activities. Reference to such events was included in the portfolios of five school teams. Teams cited other measures they used to increase parent/community support such as including parents on

school committees, inviting parents to assist in classrooms, making available instructional kits for families to check out, and holding community-wide forums. While these activities did increase parent and community involvement with the schools, evidence is lacking to indicate whether or not these activities actually garnered support for mathematics and science education programs.

Evaluation comments indicate disappointment that the JSP did not address this outcome more strongly. One group process respondent stated, "JSP did not have a great deal to offer in this area of parental and community strategies or suggestions in working/communicating with the public except for inviting a community member to be a part of the team." A response on an individual questionnaire seconded this remark and added suggestions for improvement. The JSP, according to this writer, had a "lack of provision for *visible* involvement from business." It should "[p]rovide more instruction and participation from the industry component. For parents, substitute some activities for some of the more technical programs that were offered." On the other hand, another questionnaire response stated, "Parents were uncomfortable being separated from team at institutes. [You] need to guarantee that they have a place with familiar educators."

Analysis

Evidence that schools' participation in the JSP resulted in community and parental support is meager. The requirement of including community and parent representatives on each JSP team resulted in some success in getting parents and community members involved in the schools. However, there is little evidence that this involvement resulted in tangible support for mathematics and science programs.

The most concrete examples of JSP-engendered community support were one-time contributions made by the employer of a team's business representative. Evidence also suggests that new parents were brought into some classrooms during the two year program. However, most teams did not indicate whether this was a direct result of the JSP or a result of the natural turnover of students (and parents) within the school. For example, turnout at family night events might indicate support for mathematics and science education programs or it might mean that parents are interested in finding out about what their children are doing at school.

On the whole, meaningful involvement of community and parent representatives was one of the strongest failings of the JSP. After requiring them to be on teams, the JSP paid little direct attention to the integration of these members with program activities. Indeed, none of the program's stated goals (see again Figure 1 on page 2) specifically mention community or parent involvement. Furthermore, except for one session at the first professional development event,

the JSP neglected to make provisions for directly engaging community and parent team members. These factors may account for the fact over half (56%) of those teams that reported starting with community/parent members ended the two year process without such representation.

At the very least, the JSP needed to maintain stricter standards requiring teams to adhere to the original membership guidelines outlined for applicants. Additionally, the JSP needed to include additional events or sessions at events that addressed how community/parent members might play an active role and how teams might encourage community and parent support. If the JSP expected this support to evolve outside of the JSP events, then it should have made clear to the teams how to implement the support and how to maintain momentum in the development of this support. The limited success of the JSP in achieving this outcome directly reflects the lack
of effort expended.

Outcome #3 A network among schools, colleges, universities and the Arizona Department of Education for supporting change in schools.

"I feel so honored/special because of all the people I have met and worked with whom I know I can call for help, information, suggestions which will be gladly given."

Overall Achievement Rating

Scarcely Achieved	**Partially Achieved**	Largely Achieved

Major Commendations

- significant increase in contacts with professionals in the field of science and mathematics education
- increased communication within departments, schools, and districts
- Internet access for schools within the metropolitan Phoenix area

Major Considerations

- failure to follow through on Internet access for teams outside of the metropolitan Phoenix area
- very limited networking with universities, colleges, and the Arizona Department of Education

Indicators

About 30% of the respondents to the individual questionnaire completed at graduation listed networking as something that the JSP has done well. The networking that occurred as a result of the JSP can be divided into several levels: with fellow team members, between JSP schools, among all JSP participants, with non-JSP school and district personnel and with non-school people. Additionally, there are interesting data concerning networking (and the lack thereof) via the Internet. We will examine evidence supporting each of these levels of networking.

Networking with Fellow JSP Team Members
Strong links formed among JSP team members. On the evaluation form completed for the Fall 1995 Focus Institute, the 23 team responses were

unanimous in crediting time to meet with team members as one of the most helpful aspects of the Institute. Such meeting time apparently is unavailable in the course of the normal working schedule of teachers and administrators. Supporting the value of this team time, one team gave as a Journey Highlight in its *Yearsbook* entry the close working relationship that the JSP team members had developed.

Networking between JSP Schools

In some instances, several schools from a district sent teams to the JSP. In other cases, the JSP schools were physically near each other. These occurrences resulted in some inter-school networking among JSP teams. For example, two joint applications were submitted to receive JSP-sponsored funds for professional development. One application was submitted by three teams, the other by two. The schools in each group of applicants were from the same district. These partnering efforts were a direct result of JSP involvement.

Networking among All JSP Team Members, Faculty, and Leadership

The JSP format provided a rich source of network connections among all the JSP teams, faculty, and leadership (ADE and FWL). *Yearsbook* highlights from several teams make reference to such networking links. According to these entries, the JSP allowed team members to meet people across the state with similar philosophies and goals. Opportunities to talk to teachers and administrators from other districts were valuable for comparing programs and "change" difficulties. Quotes from the individual questionnaires completed at graduation include, "I've been in contact with several team leaders and presenters over the last two years with questions, asking for information, etc. and [have] shared this with my school and district," and, "The networking with other people was most useful for our team; my school has places to turn when they are in need of help or support in the areas of math/science/technology teaching."

Networking with Non-JSP School and District Personnel

Numerous instances show how the JSP has helped teams to link up with other school and district personnel who were not directly involved with the JSP. Portfolio entries include the following accomplishments:

- Improved communication between schools in the district were cited by two teams.
- Four teams described how team members shared experiences with other faculty via personal communication and workshops.
- A team created a staff library using literature received at JSP events and money from JSP-sponsored grant funds.
- Two teams described how access to the Internet was made available throughout the school.
- One team claimed they had formed linkages with local colleges and universities.

- One team led representatives from across the district through the "Change Game"[2] (originally experienced by all JSP teams at the summer 1994 Academy).
- A team created a monthly JSP newsletter for all faculty.
- In one district JSP teams from several schools met for a sharing session.

Site visits also elicited responses regarding how JSP involvement expanded team members' connections with other people in their schools and districts. At one school, the JSP team served as a support system for other teachers in the school who wanted help with changing their instruction in science and mathematics. Another JSP team formed district-wide and community-wide ties, and even some regional ties, that are helping direct the reform efforts via "extended team" involvement. At still another school, the JSP team developed a new school-wide rapport among mathematics teachers. Also, the superintendent of this school's district invited teachers from another school to join the JSP school at an inservice and gave them money to attend. Finally, one JSP team found that their involvement in the program gave the team more clout in district administrative meetings.

Networking with Non-School People

Networking with the larger community was less successful. One school mentioned a partnership with a museum, another a partnership with a major business, and two others closer ties with nearby community colleges. By and large, however, evidence was lacking for networking at this level.

Post-secondary networking connections remain weak. The affiliation of some of the Home Base Leaders with universities or community colleges provided the only JSP-sponsored links that the schools had with institutions of higher education. The teams' contacts with their JSP faculty typically were limited to JSP-sponsored events. On the whole, faculty make contact with their teams between these events was rare. Usually this contact occurred when the team asked the faculty member to participate in a workshop for the school. For some teams the contact was even weaker because some faculty left (for reasons such as moving and new jobs, not dissatisfaction with the program) and their replacements arrived in the middle of the program.

ADE was not a major link in any network other than in its role of making Internet available to Phoenix-area teams. Key ADE personnel changed shortly past the program's midway point. This left teams feeling confused. In fact, one of the teams that dropped out of the JSP after the first year cited the turn over of personnel at ADE as one of the reasons why it decided to discontinue involvement in the program. After Mike Lang and Linda Jaslow left, participants

[2]Officially titled *Making Change for School Improvement: A Simulation Game*. This board game stresses the social aspects of effecting change and is available from The NETWORK, Inc.; 300 Brickstone Square, Suite 900; Andover, MA 01810. 1(800) 877-5400.

felt comfortable dealing with Steve Merrill but do not feel strong connections with any other ADE staff. Several team members specifically praised Steve Merrill for his dedication on following through with the JSP after the leadership changes at the ADE. Steve retired from the ADE the month after the JSP graduation event. His departure has left a void for JSP team connection with the ADE.

Links with the larger science and mathematics education community were limited to FWL personnel and guest presenters. The extended involvement (from beginning to end) of FWL's Ann Muench and Jerome Shaw received frequent praise on individual graduation questionnaires. Many team members felt that these two staff provided sorely needed continuity for the program. They were cited for their patience and willingness to work with teams and with the ADE to make the program a success. This impact is significant considering that Muench and Shaw are based outside of Arizona. While individuals from some teams continue to share thoughts and request information over e-mail contact, the extent of continuing network connections with FWL and guest presenters remains to be seen.

Internet Connections

Networking via Internet proved to be a mix of success and failure. In the summer of 1995, the JSP held an institute for representatives from each team on how to use the Internet. All teams were promised access to the Internet via a state-sponsored server and they were provided with GINA communication software. Those teams whose schools were outside of the Phoenix were promised a toll-free telephone number that they could use to access the Internet via GINA.

Phoenix-area schools were successful in getting on-line to the Internet via GINA. One team used this service to provide Internet access and e-mail in 5 classrooms. In another school, every third through sixth grader received an e-mail account. Students at this school used the Internet to get data for a native habitat project, received e-mail from other states, and have had over 25 countries visit their web site. Another Phoenix-area school having this access increased their interactions with the ADE.

Internet connection via a toll-free number for schools outside of the Phoenix area never materialized. Consequently, schools outside of the local calling range of Phoenix never received access via GINA and, according to one comment, got no support from the ADE in getting the system working. In fact, the failure of the ADE to follow through on their promises regarding GINA and related technology training received the largest number of comments (18 of 112 respondents or 16%) when individuals who completed the individual graduation questionnaire were asked to state what things the JSP could improve upon. The next largest number of responses addressing a particular need for improvement was eight.

Additionally, one of the site visitors who visited four schools outside of the Phoenix area, found that every JSP team member at every site listed the failure to follow through on Internet access as the JSP's biggest failure. Similar concerns were mentioned to other site visitors who visited other schools outside of the Phoenix area.

Analysis

Most participants agreed that they had become part of a network, but it was not as broad a network as the one described in the outcome. According to questionnaire responses, networking occurred primarily within departments, between schools in a district, and with district-level administrators. Group process respondents felt that these networks resulted in access to more resources, improved communication, access to support, and Internet contacts between classrooms.

By its very existence, the JSP increased networking within and among schools and districts and between JSP teams and the JSP faculty and leadership. This networking occurred at the professional development events where blocks of time were set aside for teams to meet with other teams in their Home Base, for team members to meet with other JSP members who were teaching at the same grade level, and for teams to interact with JSP faculty and staff. Some teams created strong links with teams from nearby schools which led to joint applications for JSP-sponsored funds.

The "Home Base" system provided good networking opportunities for JSP faculty and participants. JSP teams wanted more opportunities to strengthen these links. Of the 112 questionnaire responses, 5% specifically wanted more site visits by Home Base Leaders or other JSP teams. Another 5% wanted more opportunities to get together at the Home Base level. As one respondent stated, "We have still stayed pretty isolated with the exception of physical Journey Schools experiences."

After JSP-sponsored events, the teams usually shared what they had learned with other faculty at their home sites. The continued networking actions of team members at their schools and with their fellow teachers led to enhanced communication and interaction within their schools and districts.

For schools in the Phoenix area access to the Internet using the state-sponsored GINA software enhanced their links with other schools and with the ADE. Other, more distant schools, were sorely disappointed with the ADE's failure to provide them with Internet access. They generally felt that this failure diminished their ability to network with other JSP teams and with other distant sources of support for science and mathematics education.

Indeed, teams still would like to see the ADE follow through with its promise to provide Internet access. They see the Internet connection as a means for all JSP members to continue communicating even though their official involvement in the JSP has ended. As one team pointed out, access to the Internet is a primary need among rural schools because they are isolated and lack the opportunities that urban teachers have to network among other teachers.

The failure of GINA has left the JSP with no mechanism in place to support ongoing networking of team members with other teams, universities, colleges, the ADE, and FWL. No new mechanisms have been developed. If some computer-based communication system were in place, the JSP could set up an electronic bulletin board or forum, accessed via Internet, specifically for all individuals and organizations that were involved in the JSP. Free, ongoing access for all JSP schools would serve as a means for the continuing communication that is essential for maintaining broad network links.

Unless some mechanism is developed whereby the fledgling network developed by JSP involvement can mature, many of the network connections are likely to disappear. Even the links within the schools and districts may diminish without the nurturing presence of the JSP.

Outcome #4 Access and support for all students to quality mathematics and science instructional materials in classes taught by skilled and knowledgeable teachers.

"The team is doing very well in this area. The quality of instruction we are achieving is great."

Overall Achievement Rating

Scarcely Achieved	**Partially Achieved**	Largely Achieved

Major Commendations

- teachers with enhanced abilities to provide quality instruction in mathematics and science
- schools that have implemented new, better quality mathematics and science instructional materials
- progress in providing access and support for all students to quality mathematics and science instruction

Major Considerations

- limited success in exporting new materials and skills beyond the team members' classrooms
- no means to measure access and support for students
- too short a time for effects on students to be evident

Indicators

As with the first outcome, Outcome #4 is complex and warrants subdivision for a more manageable discussion. We have divided this outcome into the following two parts: (a) provision of quality mathematics and science instruction by skilled and knowledgeable teachers, and (b) quality instruction available to all students. Respectively, these sub-outcomes separate out the excellence and equity interests expressed in the complete statement. Attainment of the unified outcome is discussed in the Analysis section that begins on page 35.

Outcome 4a **Provision of Quality Mathematics and Science Instruction by Skilled and Knowledgeable Teachers**

"We created an integrated unit—nine weeks with multiple hand-on math/science activities. It was very successful with students and great fun to teach."

The JSP's main contributions to enhancing teachers' abilities to provide quality mathematics and science instruction were the summer 1994 Academy where innovative mathematics, science, and technology curricula were highlighted and the 1995 fall institute that focused on alternative assessment. At the former, participants gained hands-on experience with quality curricula including National Geographic's KidsNet, FOSS, GEMS, Family Math, Interactive Mathematics Program (IMP), and many others. At the latter, team members learned about the various forms that assessment can take, such as performance assessments, portfolios, projects, and how to construct assessments that authenticate their students' learning experiences.

On the JSP graduation questionnaires, most participants stated that, as a result of the JSP, their schools experienced an increase in teacher inservice workshops and ongoing support for change. Team members shared newly learned knowledge and skills with their school faculty members, which enhanced the knowledge and skills of many teachers at JSP schools. Also, money obtained via the two ADE-sponsored grant programs for JSP schools provided resources for school-wide improvements in mathematics and science instruction. Team members claimed that the resulting increases in teachers' skills and knowledge resulted in slow, steady changes in teaching which resulted in students exhibiting higher interest, increased discussion, less fear, and more motivation. Teachers were less fearful of change and some even created new units.

The best evidence for changes in the quality of mathematics and science instruction comes from site visits. Information from ten site visits indicates that teachers at all these sites have implemented new, quality programs or activities and two sites have revised assessment policies to include performance-based assessments. Frequently, the new curriculum materials are ones that teams had experienced at the 1994 summer Academy. All of the new programs, activities, and assessments are more student-centered (as opposed to teacher-centered) and include manipulatives and hands-on activities. The impact has been strongest among teachers who are JSP team members and attended JSP institutes. However, in many instances the improvements have expanded to include other faculty, especially in schools where new science or mathematics curricula have been adopted.

Portfolio and *Yearsbook* entries listed changes in curriculum and instruction among JSP schools. Eight portfolios and three *Yearsbook* entries made direct reference to curriculum changes that the teams felt had resulted in a positive

change in the amount and quality of mathematics and science being taught in the classrooms. As stated earlier, 33% of the JSP schools (10 of 30) adopted new science or mathematics curricula. One team stated that the use of a constructivist-based science curriculum led some teachers to use some of the same strategies in mathematics and social studies. Another team told how JSP-influenced staff development led to more cross-grade level and in-grade level teaching and sharing.

Of the sites visited, two had made school-wide changes in instruction. At six others, the changes in instruction were spotty depending on JSP team influence on other teachers, and at one school they were limited to classes taught by JSP team members. Changes in assessment policy appear to be limited to JSP team members; however, at least one team is planning to hold district-wide staff development on how to accomplish performance-based assessment.

Evidently the 1994 summer Academy had a far-reaching impact on providing quality mathematics and science curriculum and instruction at JSP schools. The assessment institute had a smaller, but significant, influence on JSP schools.

Outcome 4b **Quality Instruction Available to All Students**

"The team has had progress towards access for most students, not all."

Implicit during all JSP professional development events was the need for equity in school change. The curricula and teaching strategies stressed in the program align with those emphasized in national standards as being appropriate for the diverse learning styles of all students. JSP staff and faculty stressed ways to enhance the learning of formerly unreached populations of students, such as those who learn best in nontraditional ways, those who refuse to participate through lack of interest, and those with learning disabilities.

For example, during the assessment institute speakers from the Navajo community of Chinle described their work with FWL to develop performance-based assessments that met the state's reporting requirements and reflected the local context (rural with a strong traditional Navajo culture). In the past, Chinle students frequently did poorly on standardized assessments because the assessments did not address the students' dominant learning styles and had a context more appropriate to urban/suburban Caucasian populations. These guests shared strategies they used for modifying existing assessments to avoid these pitfalls.

At JSP schools, *progress* appears to be the operative word. Teams mostly feel that they are making progress towards increasing access for all students but have yet to achieve this goal. In interviews, teams stated they felt that they had made progress by improving access to technology, promoting the NCTM standards

school-wide, purchasing manipulative and new technology materials, integrating themes across curricular areas, and promoting team teaching.

Again, site visits provided a rich source of information. One team described a change in philosophy that their school had developed as a result of their involvement in the JSP. Beforehand, students were expected to reach academic outcomes with little variability in how they might do so. "Now teachers expect the same outcomes from all students even though the ways of getting to the outcomes are different for all students."

This new philosophy, coupled with changes in instruction and materials, had a large impact on all students at this site. While involvement was not equal on the part of all students, all of them were impacted. *All* students had been involved with JSP-connected science and math projects, and *most* students now found science and math much more interesting. For example, all students, including the mainstreamed, mildly mentally retarded, participated in library learning centers in science, where learners did high interest, hands-on activities.

At another school, most of the changes to date have been limited to mathematics classes. The class structure varied from multi-grade level, integrated math classes that use faculty-developed activities to single-grade level classes—some with the same instructional materials used in multi-grade classes, others with materials from the Interactive Mathematics Project. The JSP team members said that the use of multi-grade level classes aided learning because students could work at their own pace and ask for help from more advanced students. Also, they claimed the teacher-made materials were more authentic. The instructors for all the new mathematics classes felt that they did so many different things in these classes that frequently something caught the interest of a previously unmotivated student.

Student perception of instruction, however, was somewhat different. One student in a multi-grade class using faculty-developed activities said that the new mathematics class was geared heavily toward one way of learning. She felt that students like her, who can think abstractly, were most likely to be successful, whereas students who need more manipulatives or visual images to achieve understanding had a harder time in class.

Another team stated that a great deal more experiential learning is happening in their district due to the implementation of AIMS, science kits, applied mathematics, and mathematical manipulatives. Student interest in science and mathematics classes had increased. For example, the number of students going on to the next level of mathematics increased dramatically since JSP-influenced teaching changes were implemented. Still, the team felt it was too early in the process of change to determine how changes in instruction were affecting all students.

Yearsbook entries listed examples high-interest activities intended to reach a broad range of students. At one school students prepared maps and plans for a xeriscape garden. At another, students developed a recycling program and continued it throughout the year. A third found that teachers were delivering mathematics, science, and technology in more meaningful ways by using cooperative learning structures. Another school gave examples of new assessments they implemented including electronic portfolios in several classrooms and student-written multimedia presentations in every classroom. These examples indicate that teachers are making a concerted effort to make quality instruction available to all students.

Data sources also disclosed areas where teams/schools fell short with this outcome. Some teachers, according to a team member from one school, do not utilize resources that were put in the classroom to benefit the teachers (and students). At another school team members were disappointed that the transfer of new teaching strategies to non-JSP teachers was poor.

At other sites the evidence is more equivocal. For example, while one team member at a school thought that making math more real world and hands-on *should* make it more accessible to all students, a fellow team member stated that this year's impact has not been as great as he would have liked. They are not reaching the students who do not want to be in school. Also, while more students are willing to do the work, the failure rate for completing homework still is high.

Analysis

This outcome particularly challenging to evaluate due to its multiple critical components (i.e., skilled and knowledgeable teachers, quality mathematics and science instructional materials, access and support for such materials by all students) and the lack of program-wide quantitative data related to these variables (e.g., pre and post counts of student enrollment in classes using quality mathematics and science instructional materials). Furthermore, it is unclear what the outcome means by stating "support for all students to quality mathematics and science instructional materials."

Nevertheless, evidence indicates that the JSP did make inroads in addressing issues of *excellence*—for example, skilled and knowledgeable teachers—and *equity*, such as student access to quality mathematics and science materials. Teachers at JSP schools are delivering higher quality instruction than they did before their involvement in the JSP. The changes in teaching strategies and curriculum materials appear to have increased the number of students with access to quality mathematics and science instruction. At this stage, not *all* students have this access because the changes in materials and strategies have

not addressed all students' learning needs uniformly and not all teachers are using the higher quality materials and strategies.

In our view, the support issue is directly related to intent. In order to provide support for *all* students to achieve their best in mathematics and science, teachers must possess a sincere *desire* to make that happen. By providing exposure to and funds for implementing new, more equitable teaching strategies the JSP attempted to enhance participants' awareness that all students *can* learn as well as provide them with tools for achieving more equitable outcomes. However, the extent to which JSP team members truly embrace the "all students" rhetoric and effectively use those tools is undetermined.

Finally, implementation of new ways of teaching does not happen overnight. Teachers need time to become more proficient in delivering science and mathematics instruction in new ways. While it may take years, teams may find that the number of teachers using the higher quality materials and instructional strategies will increase as teachers gain experience and colleagues note positive changes in students' attitudes and achievements in science and mathematics classes.

Part II. Case Studies

Introduction

This section presents case studies based on the experiences of three Journey Schools Program (JSP) teams. Their schools were among the group of ten sites visited by program staff in the spring of the JSP's second year. The three sites were chosen for case studies because they illustrate the range of impacts that the JSP had in producing systemic change in mathematics and science education. The issues and themes evident at these schools are representative of what the visitors saw at all ten schools.

Each of the three case studies illustrates a different level of impact. The first shows a team that made an impact throughout their district, the second highlights a team that significantly influenced education throughout their school, and the third illustrates a school where the impact was limited primarily to individual team members. While the discussions of each site necessarily have different subsections, each case study ends with an analysis of the data presented. The names of schools, cities, and people have been changed to maintain anonymity.

Case Study A. District-Wide Impact

Pinyon Unified School District: Filling the Void

Pinyon is a small town of approximately 8,000 in rural Arizona. The town serves as the shopping hub for over 30,000 regional inhabitants. The region relies principally on agriculture, mining, and state and federal prisons as sources of employment. According to 1993 statistics, the unemployment rate for the county was 10% which was higher than other counties within Arizona and considerably higher than the state unemployment rate of 5.7%.

The Pinyon Unified School District (PUSD) includes two elementary schools, one middle school, and one high school. The ethnic composition of the school population is about 33% Hispanic with most of the remainder being Anglo. Approximately 50% of PUSD's high school graduates apply to post secondary institutions.

Initial Team Development

For Pinyon Unified School District the JSP came along at an opportune time. Lauren Franklin, the team leader of the Pinyon Unified Schools Journey Schools Team, recently had been hired as Director of Instructional Services and given a mandate to promote change in education. Robert Davis, head of the high school's mathematics department, was looking for new teaching ideas. Ellen Powell, Pinyon School Board Member, was very supportive of promoting change, as were the district superintendent and George Beck, Pinyon High School principal.

At the same time, the nearby community college mathematics faculty was looking for ways to assist the high school in better preparing students for college-level math. This was because many students entering the school did not have mastery even of basic math skills. Henry Wisinsky, a mathematics teacher at the college, arranged for the school's faculty to meet with high school people to open dialogue between PUSD and the community college.

Except for the district superintendent, all the people listed above became part of Pinyon's JSP core team. The team entered the JSP with the initial goal of improving the mathematics skills of Pinyon's high school graduates.

This team believes that the JSP's week long Academy in Tucson was the best thing that JSP did in the entire two years. It provided the most opportunity for exploring hands-on curricula and communicating with people from other

schools. It also allowed time for team-building. Pinyon team members were given time to work together on their common goal of readying students for college level mathematics.

At the Academy, the team made a point of going off campus for dinner each night to get to know each other better and to discuss the day's events. This routine would not have developed had not the team been housed in university dormitory facilities. As a result of the bonds developed during their evening get-togethers, the team has continued to consciously include socialization as an important aspect of team building over the past two years.

Presenters at the Academy made participants very cognizant of the fact that change is a slow process. The Pinyon team began to realize that their goal of improving students' mathematics abilities was probably a five- to eight-year goal rather than a two-year goal. They also realized that change could not be effected from high school down to the lower grades. Instead, they needed involvement of educators in all grades, K-14, and of the community. Expanded district involvement became the focus of this team's early efforts.

Expanded Team Development

In September, 1994, the team kicked off their efforts to expand JSP involvement throughout the Pinyon district and region by organizing a community forum. The team invited several hundred people from the community and region (business, family, college, school) to two meetings, in October and November, 1994.

At the first meeting, the JSP team divided the attendees into smaller groups. Each group had a diversity of people (e.g., automotive technician, city manager), and was facilitated by a JSP team member. Individuals were asked to state, from their point of view, what they felt a graduate from Pinyon High School should be able to do and what skills the graduate should possess or what he or she should be able to demonstrate. The basic response from attendees was, "Send us students who can think and have good work habits, and we can teach them anything." This response encouraged the team to pursue educational change that is process- and skill-oriented.

After collecting and analyzing all the feedback from the first community meeting, the team identified four areas that would form the basis of their vision: mathematics, science, technology, and life skills. They invited the same people back again and grouped them according to their interest in one of the four areas. These subcommittees then started to flesh out their portion of the team's vision.

In April, 1995, the team finalized their vision: "Students will demonstrate the application of math/science for daily living and career choices by using

strategies such as critical thinking and problem solving. Students will use modern technical tools to solve problems, access information, and communicate. Students will demonstrate civic values and the skills of independent thinking, cooperative problem solving, and effective communication."

With the final vision created, each subcommittee on the expanded team has been directed to examine the vision and come up with a list of what needed to be done to reach the vision within the next 3-5 years. They are to include advice on what needs to be done in terms of curriculum, staff development, etc.

The subcommittees shrank in size as time went by, but they still serve as part of the JSP expanded team. The expanded team also includes two representatives from each of the Pinyon schools. The superintendent *required* that the principal of each school serve on the expanded team. Each principal was asked to nominate two additional representatives who were responsible and reliable teachers interested in improving mathematics and science education. Consequently, the expanded team includes a large number of well-respected, reform-minded educators. Pinyon's Journey School Expanded Team presently is comprised of 46 members: 18 K-12 teachers, 10 higher education representatives, one school board member, 10 administrators, and seven community members.

Each of the four subcommittees of the expanded team, one for each aspect of the vision, chose a chairperson who was not a member of the core team, even though each subcommittee included at least one core team member. The JSP team purposely chose this course to create more ownership on the part of the expanded team subcommittees and to prevent the impression that a small cadre (the core team) was dictating what the larger team needed to do. On each subcommittee, the core team member's role is to share what happened at institutes and to report back to the core team what is happening in the subcommittee.

The commitment required from each of the expanded team members is neither heavy nor constant. Instead, they are called together after the core team returns from JSP institutes or when the core team sees a need for their input and involvement. When a particular goal or project arises (such as after each training session), the expanded team is informed of what went on and what they need to do to help the district accomplish the goal or project.

Progress to Date

By the spring of 1995 the team had established a strong record of achievement. The district superintendent agreed to include the JSP goals, objectives, and outcomes into the district's comprehensive plan, and he encouraged the principals to incorporate the JSP goals into their 95-96 school goals. Staff development became the team's primary major focus as they began

implementing systemic change. Over 25 staff development workshops have taken place over the past two years. First year workshops included AIMS training, training in applied math and applied science, and a Phi Delta Kappa-sponsored workshop addressing literature and problem solving. The team's 1996 JSP grant proposal requested funds to support staff development experiences in performance assessment in relation to the AIMS curriculum.

After receiving feedback from the expanded team, it became clear that changes in mathematics and science learning would not occur unless the schools first concentrated on how the *student* thinks and learns. Throughout the 1995-1996 school year district staff participated in training that focused on the learner. Cooperative learning, critical thinking, and national mathematics and science standards became key areas for JSP team support.

At the beginning of the 1996-97 school year, the expanded team will meet to share the long range plans that each subcommittee has developed and to celebrate the accomplishments of the past two years. The reform process will continue as the team sets priorities for the next year.

Major Successes

What are some of the big successes of the Pinyon JSP team? Before JSP and Lauren's arrival there was no centrally coordinated staff development in the district. Each principal had a small pot of money that he or she could give out to individual teachers based on the principal's decision of how the funds should be spent and teachers' willingness to approach the principal about wanting funds. Now there is a large pot of money for district-wide staff development as well as a small amount of discretionary funds for each principal.

Staff development became a major focus for Pinyon's JSP team. As a result of this strong push for staff development, Pinyon has become the staff development center for all schools in their region and has received Arizona Department of Education funds ($20,000) to aid them in these efforts.

For Pinyon Unified School District, the emphasis on staff development has led to significant changes in teaching throughout the district. In the past, most instruction was textbook driven. Math was very much stand, lecture, do problems, and every 5-7 days have a test. In science they purchased kits four years ago but teachers have been slow to use them. It still is not unusual to walk into a classroom and see a teacher teaching from the textbook while the kits sit unopened.

Yet now a great deal more experiential learning is happening in the district. For example, one teacher's students responded so positively to hands-on instruction that she used it as a discipline measure. This made her realize that this is the

way that kids want to learn and she is using even more of the hands-on activities. In another classroom, students are working together more. Instead of asking the teacher for the right answer the students talk with each other to compare answers and methods. The teacher's role has switched from lecturer to facilitator. Student interest in mathematics and science has increased dramatically in the district.

Analysis

How was Pinyon able to obtain ongoing, enthusiastic commitment from so many different players? Lauren cites several factors. First, Pinyon was so sorely lacking in quality curriculum that the teachers were "dying" for change. Second, the comprehensive makeup of the core team had a huge impact on its effectiveness. In addition to Lauren, who is the district's curriculum director, the team included a board member, several teachers, the high school's principal, and a community college faculty member. The size of the district also was a factor. With two elementary schools, one middle school, and one high school the district was neither too small nor too large to accomplish widespread change in educational practices. Finally, the dormitory living experience at the 1994 summer Academy was invaluable for this group. Living in close quarters for six days gelled the team.

Another reason for their success is that they have received the wholehearted support of the superintendent and school board. Both have actively pursued change that was initiated by the JSP team and have encouraged, and even required, district-wide participation in reforming mathematics and science education. The district's principals also encourage their teachers' participation in JSP team-sponsored workshops, and they themselves often attend staff development programs.

The Pinyon JSP team pays close attention to its "social being," always meeting off campus and spending nearly as much time socializing as working. Lauren contrasts this to other teams she has talked with at JSP professional development events who tell her that the schools within their district don't even talk to each other. Indeed, in some schools teachers from one department do not communicate with their colleagues in another department.

Lauren feels that the Pinyon schools were leaning towards reform before the JSP began. The JSP served to raise the level of consciousness within the district for the need for reform. It also provided a goad as an outside influence/higher authority and provided support and resources to those who were promoting change within the district. While some changes likely would have happened without the JSP, the JSP provided the glue for the district to put together a systemic movement for science and mathematics reform.

Case Study B. School-Wide Impact

Cactus Elementary School: Validation and Extension

Cactus Elementary School is in an urban community that encompasses a portion of a large Arizona city. The largest segment of the area's population is Hispanic. The locale has a low socioeconomic status and the principal occupations of the parents who work are in blue collar and service oriented jobs. Safety issues are a high priority in the district because many gangs have claimed various areas within the school district as their territory.

Cactus is a K-5 elementary school serving approximately 550 children. Children with special needs are mainstreamed throughout the school. Cactus Elementary mirrors the demographics of the district. The school population is 66% Hispanic and 27% Anglo.

Team members include Susan Larkin, principal and team leader, teachers from grades 2, 3, 4, and 5, a library media specialist, a computer lab instructional assistant, and a parent who volunteers at the school.

According to Susan Larkin, the principal, the JSP was a validation of what the school already was doing. Prior to the JSP, Cactus Elementary already was using a range of currently promoted methodologies including integrated thematic units, cooperative learning, authentic assessment, problem solving, and FOSS Science Kits. The staff maintains a high level of motivation towards improving their school and increasing their ability to develop students into life long learners and problem solvers.

JSP goals dove-tailed with the school vision, the school's strategic plan, and its school improvement plan. Also, the JSP brought an emphasis on mathematics and science at a time when text adoptions were imminent—their science adoption coincided with the ending of the JSP; their mathematics adoption is coming up next year.

School-wide Influences of the JSP

Two JSP-influenced changes are readily apparent at Cactus Elementary. First, the library has assumed a secondary role as a science activity center. Karen Rice, the librarian, had been setting up integrated activity stations in the library prior to the JSP. However, the JSP influenced her to include many more hands-on science activities than she had in the past. All students from all grades participate in these high-interest learning centers.

The second obvious JSP influence is the COWs—computers on wheels. In the early months of the JSP, the Cactus team decided they needed to enhance their use of technology and increase active student participation in technology-based learning. The school had computers but they were housed in one room. Teachers found it inconvenient to schedule special times to bring students with their work to the room to use the computers. The JSP team came up with the solution of making the computers mobile. They scrounged up the necessary building supplies and assistance to create wheeled computer carts which are now affectionately known as COWs. Teachers can sign up to take some or all of the COWs to their classrooms. At other times, the COWs can be found throughout the library where they are readily available for students to use.

Other school-wide influences of the JSP are less obvious but just as important. Teresa Wilcox, fourth grade teacher and JSP team member, described how the JSP provided monetary support for inservices and other training, allowed the purchase of supplements for hands-on activities, and made the staff more aware of the way that teaching approaches are changing. Teaching, she claimed, has changed dramatically and now includes team planning and encouragement for more hands-on instruction. The team planning aspect was very important to Teresa because it gave her support for using more hands-on activities and for teaching "ideas" rather than rely on instruction via student worksheets.

Other JSP team members met as a group enumerated an array of JSP-associated benefits to their school and district:

- It helped the school define and refine the use of hands-on science.
- It showed the school staff how to use systems thinking to do problem solving.
- It helped the school focus more strongly on incorporating educational technologies.
- The presence of two JSP team members on the district's textbook adoption committee influenced the committee to recommend purchase of innovative science and math materials.
- Two team members provided a district-wide inservice regarding innovative science and math teaching.
- Non-JSP teachers are piloting an innovative mathematics program.
- All teachers are feeling a higher comfort level for teaching science and math problem solving and in using technology.
- JSP grant moneys have helped the school focus on technology as a way to enhance science and math.
- There has been a school-wide improvement in science programs.
- Science and math instruction has definitely switched from textbook driven to activity-based.
- JSP has enhanced site-based curriculum development—they pull from FOSS, GEMS, AIMS, etc.

- JSP goals and objectives have been written into Cactus Elementary's School Improvement Plan.
- JSP was a catalyst for grade-level teams to develop rubrics and try alternative forms of assessment.
- Attendance at school-wide faculty professional development meetings has been enhanced.

Influence of the JSP on Team Members

Teresa claimed that her participation in the JSP sparked a renewed excitement in teaching. JSP has "forced" her to try new things and has made her more comfortable as a science/math/computer teacher, with most of her growth occurring in the area of math. As a result of her involvement she has given presentations to other teachers in the school on topics related to science and computers; she is using more math manipulatives with her students; she has applied for Project Prime, a three-summer university program that addresses teaching math with manipulatives.

Teresa also volunteered to pilot a new mathematics curriculum that uses manipulatives. She feels her students now enjoy school more because she encourages interaction among the children in class. She began changing to an interactive classroom before participating in JSP, but the JSP encouraged her to continue this trend. Generally, Teresa feels that the JSP made her aware of the curricular and cognitive research that supports trends that the school's administration already was promoting. Also, she has worked with the librarian, Karen, to develop integrated, interactive teaching units.

Sixth grade teacher and JSP team member Sharon Morland also increased her used of hands-on science and of technology as a result of her participation in the JSP. In addition, she and other team members have expressed an increase in the development and use of their leadership skills. Cactus Elementary uses integrated thematic units and the JSP team members serve as strong resources for other teachers using these units. Two team members have led district workshops on science instructional materials. Yet another JSP team member was co-chair of the district's science adoption committee and influenced the committee's decision to adopt innovative hands-on science curriculum.

Influence of the JSP on Students

When asked whether JSP involvement had enabled the school to better teach all students, the team members first responded that most students now find science and math much more interesting. Then they elaborated that all students have been involved with JSP-connected science and math projects through the activity centers in the library which serve all students, K-5, including mainstreamed

mildly mentally retarded. While involvement may not have been equal on the part of all students, all of them were impacted.

Children in JSP team member Anne McDonald's third grade class exemplify the school climate toward mathematics and science. When talking with JSP evaluators, they all were very enthusiastic about everything they had done during the school year. They listed over a dozen projects that involved math and science, and they were eager to show evaluators their products. Common comments included, "It's fun!" and "We've done tons!" When asked to name one thing that they didn't like about math and science this year, the only thing the students could think of were the ASAP tests, which are state-constructed assessments mandated by the district.

Analysis

Cactus Elementary, with support from the district, has been pursuing systemic change for a number of years. The JSP dovetailed nicely with ongoing efforts and supplied additional knowledge for team members, resources for training teachers, and a source of enthusiasm and support for continuing the change process.

The Cactus Elementary team attributes their success primarily to a cooperative, committed staff who don't "shirk work." Also, they felt that having the principal as an active team member and receiving support from district administrators were critical factors in their success. Finally, members of the JSP team are spread over the entire range of grade levels thus ensuring a broad impact at the school.

One leaves Cactus Elementary School with the feeling that this school is an example of how all teachers and staff can work together to make learning as good as possible for the children in the school. There is a strong team spirit among all the adults in the school and all seem deeply committed to giving the children a quality education. The staff carries this commitment beyond the walls of their school. For example, in conjunction with a program entitled "Teachers for Tomorrow," they have invited high school students who are interested in becoming teachers to volunteer in the classrooms.

Case Study C. Individual-level Impact

Mesquite Middle School: Individual Growth in Innovative Teaching

Mesquite Middle School is part of an urban school district which serves communities with a predominantly Hispanic population. The school serves 1140 students in grades six to eight. Approximately 70% of the student body is comprised of "minority" populations.

Mesquite's original JSP team consisted of the principal, Margaret Frazier, four teachers who teach mathematics or science, a parent, and a community representative. In the spring of 1996, the only non-staff member on the team was a board member/parent who occasionally works with a teacher on the JSP team. Thus, non-school representation was reduced to one member.

The vision that Mesquite Middle School team developed during the 1994 summer Academy expressed the desire to develop "a sustained focus for supporting instructional strategies that will increase the quality of learning for all students." The vision elaboration stressed assessment (open-ended, varied methods), facilitators (both faculty and students using relevant content, hands-on, integrated curriculum that includes research and involvement), and resources (technology such as computers, video, and CD-ROM and community including parents, business, guest speakers, and enrichments/rewards). This vision contains many key words but offers little in the way of a directed plan, suggesting a lack of strong commitment on the part of the team to create lasting change.

This lack of commitment was confirmed by Margaret, principal and JSP team leader, who freely admitted, "Our focus isn't on Journey Schools until we have to do something." She felt that the major benefit of the program was the distribution of funds to JSP teams for staff development and follow up. Margaret explained that these were "opportunities we never would have had" without JSP resources. The JSP also gave the Mesquite team the ability and resources to conduct a math and science family night, which was a big success.

On the other hand, the Mesquite team was very disappointed when Internet access did not materialize. Team members came back from the Internet Training very enthusiastic and when the promised follow-through did not materialize, the team was very let down. Margaret said that this was JSP's biggest failure and that such access was Mesquite's largest reason for getting involved with the JSP in the first place.

Ms. Frazier's statements support the view that Mesquite's major reason for involvement in the JSP was to obtain knowledge and resources to pursue projects such as increasing technology usage at the school, providing additional staff development aimed at learning about what new instructional strategies were being promoted in education, and organizing family nights. This represents a limited interpretation of the systemic reform promoted by the JSP. Still, some progress toward systemic change was made. The team sponsored a number of professional development workshops and community events that have the potential for producing ongoing change.

Team-sponsored Events

The Mesquite team sponsored a family mathematics and science night in February, 1995. Students and their families experienced high interest, hands-on activities. Turn out was high and feedback was very positive. The success of this endeavor led to the organization of a family United Nations night later that year. A career day also was developed as a result of these early successes.

In May, 1995, the JSP team sponsored a two-day staff development workshop. While some of the workshop sessions addressed strategies for teaching science and mathematics, others appeared to be more generic. Activities included:

- teaching scientific thinking,
- interdisciplinary instructional strategies (including WordPerfect, use of technology in the classroom, classroom management, mastery learning, and modifications for mainstreaming),
- Folded Spiral Books,
- multicultural views of the Big Dipper, and
- forming an action plan.

The Mesquite JSP team's most recent professional development proposal likewise described a variety of topics that will be covered in a two-day workshop for 85% of the faculty. Teachers will be expected to work collaboratively to create units and assessments during this workshop. Additionally, some JSP grant money will be used to give mini grants to 20 teachers (33% of the staff) to support instructional strategies and to provide further professional development opportunities to 10 teachers. Workshop topics will include:

- using meaningful assessments,
- multiple intelligences strategies for instruction,
- performance assessment in the classroom (a video), and
- assessment for quality learning (a video).

No cohesive goals or clear directions stand out in this team's actions. This goes hand in hand with the lack of direction in the team's vision statement.

School-wide Influence of the JSP

Site visit interviews yielded conflicting evidence with respect to school-wide changes at Mesquite as result of involvement with the JSP. Kathy Dillard, a JSP team member who teaches sixth and seventh grade math, science, and language arts, suggested that the JSP helped the school focus on developing a strong math and science program and helped teachers change their methods of instruction and assessment. Kathy claimed that the school's JSP involvement resulted in a tremendous growth in students' mathematics performance on district-mandated tests.

Patricia Brown, seventh and eighth grade bilingual teacher (including math) and JSP team member, stated that Mesquite Middle School's involvement with the JSP sparked improvement in math and science instruction. According to Patricia, this is the first time the school has made a concerted effort in these areas. She felt that the JSP has influenced the rest of Mesquite's teachers, primarily through the inservices it funded and through the personal interactions team members have had with other staff.

Contrary to Kathy and Patricia's comments are the sentiments of John Collins, JSP team member and science teacher. In John's opinion, the JSP has not impacted the whole school but rather has influenced mostly the team members directly involved in the program. These changes are highlighted in the next section.

Influence of the JSP on Team Members

While school-wide influence may be questionable, individual impact appears more certain. Conversations with Kathy, Patricia, and John indicated that these teachers made significant changes in their instructional strategies as a result of participation in the JSP.

Kathy teaches sixth grade mathematics and language arts to the same set of students. She assigns projects that integrate the two subjects. For example, in math the students studied fractions and then heard a story titled *Fraction Action*. The students' assignment was to listen to the story, think about how they could use fractions in a story, and then develop such a story with an illustration. Kathy's students frequently manipulated objects in various settings in order to learn math concepts. This differed from what students had experienced with other teachers in previous years when none of the students had used so many manipulatives or had worked in groups the way they did this year.

Kathy has been changing her teaching strategies slowly for a number of years. Still, the JSP provided an avenue to learn more about mathematics (her educational background stressed language arts), heightened her awareness of the

need for interactive teaching and assessing, and increased her interest in professional development in the areas of mathematics and science. As a result of the JSP assessment workshop she has been trying new forms of assessment such as having students write letters to her explaining new concepts.

JSP-influenced changes for Patricia include increasing the kinds of activities she uses to teach mathematics and changing the way she assesses. She no longer gives formal tests and relies much more on students' activity-based products and her own observations to evaluate student achievement.

As a result of his participation in the JSP, John has increased the frequency with which he uses laboratory activities in his science classes. He also uses more types of hands-on materials, many of which he first saw at the 1994 summer Academy.

However, John feels that the JSP's greatest effect on him and his students is related to assessment. Formerly, he used "traditional" tests as his primary means of assessment. As a direct result of the JSP institute on assessment he revamped his whole assessment strategy. He developed rubrics (both alone and with his class) and shared them with students before beginning a new unit so that the students knew his expectations from the start. He now frequently develops individualized assessments and uses a wider variety of assessment techniques. For example, on one quiz he allowed a student to respond orally rather than on paper.

Analysis

The limited success of Mesquite Middle School in creating systemic reform in mathematics and science education can be attributed to two key factors: (1) the team's weak commitment to the program and (2) the exclusivity of the team's membership, which was limited primarily to the school's mathematics and science teachers. The parent and community representatives appear to have had little influence on the team, and the team leader/school principal admits that the JSP and its mission were not primary concerns for her school.

While involvement in the JSP has improved the teaching of mathematics and science among team participants, there is no evidence that the improvements spread beyond the original team members. However, Mesquite's 1996 professional development grant may expand the JSP's influence because the money will be made available to all teachers at the school. Teachers will write mini-grant proposals explaining how they want to use the money to improve instruction and integration in their classrooms. Additionally, community events that have developed as a result of the JSP team's initial development of a mathematics and science family night may provide a vehicle for continued involvement of the community with Mesquite Middle School.

Part IV. Concluding Remarks

The Arizona Journey Schools Program (JSP) represents an admirable effort by a state department of education to systemically reform mathematics and science education. The program's major successes include bringing together teams with both school and community-based members, building the capacity of these teams to envision and implement systemic reform in mathematics and science education at their sites, and promoting the application of this reform to all students. The JSP's shortcomings include a lack of meaningful involvement of community and parent representatives, the failure to establish an Internet-based electronic network among all participating schools, and poorly-defined objectives with respect to equitable reform. On the whole, however, the JSP can be credited with catalyzing, enhancing, and supporting standards-based mathematics and science education reform at over 30 schools across the state.

What, then, are some of the enduring lessons from the Journey Schools' experience? First, an effective way to produce systemic change is to use a diversified team approach. The inclusion of school (and district office) administrators as team members is especially crucial. Second, change that is significant and long-lasting must be given time to develop. Two years time is barely more than a strong start. Third, professional development activities should include affective rewards as well as cognitive gains. Paying attention to social aspects (i.e., allowing for fun) can help avoid participant burn-out. Fourth, exercise caution when making promises that involve high tech equipment. Successful use of cutting edge technology requires an inordinate amount of human and physical resources that you may not be able to provide. And, fifth, leadership distributed within and across agencies can provide continuity through unanticipated personnel changes. Pairing governmental and non-governmental staff in key leadership roles increases the likelihood of a long term program's consistency of focus and implementation.

More specifically, we offer the following suggestions for improving the JSP, which likewise serve as caveats for those considering similar efforts:

From a CONCEPTUAL Perspective

Develop outcomes that are more clearly worded and narrowly focused. As presently expressed, the JSP outcomes suffer from lack of clarity and intentionality. For example, in Outcome #2, what exactly is meant by "involvement and support"? And, in Outcome #3, what "change" is to be supported? Moreover, which outcomes or aspects thereof apply to teams, individuals, or both?

Identify indicators for intended outcomes at the start of the program. Specifying relevant indicators helps clarify outcomes. It also indicates areas of focus so that appropriate data can be collected, thus promoting more thorough analyses.

Carefully think through the expected commitment from and intended benefit for parents and other community members. Consider how these stakeholders' needs are different from those of school-based personnel and plan activities.

From an OPERATIONAL Perspective

Consider contracting with a commercial vendor for high tech services such as Internet access. Public sector bureaucracies typically do not lend themselves to the time-sensitive and time-consuming support required in this field.

Provide professional development experiences targeted at the interests and needs of non-educator participants. Parents and business representatives do not need or want to know everything a teacher should about school change. Provide professional development activities for community-based team members that build the knowledge and skills they need to effectively participate in school change (e.g., providing leadership on a school site council).

Acknowledge and support the efforts of "specialized" team members. Roles such as "Portfolio Editor" and "Internet Coordinator" require extra effort on the part of those who assume them. These duties should be honored and rewarded in the interest of quality results. For example, the average quality of the team portfolios could have been vastly improved with more consistent attention to the submissions by JSP staff and some positive incentives for the editors. Furthermore, these roles should be complemented by clearly designated responsibilities at the leadership level (e.g., a primary contact person for Internet Coordinators who monitors their progress and helps troubleshoot difficulties).

As with any change effort, sustainability is an issue. In our appraisal, the JSP has created enough momentum in a critical mass of Arizona educators to forseeably effect significant long-term change across the state. Such an outcome would take continued support from key players such as the ADE and FWL or equivalent agencies. The JSP cadre of forward-thinking teams of individuals has reached important milestones along the journey to high quality mathematics and science education for *all* students. A prudent question is, are they there yet? To paraphrase the Bedouin in the signature cartoon for the Journey Schools Program (reproduced on the next page), "Give them a break—they're nomads for crying out loud!"

"Are we there yet?"
"Give me a break—
we're NOMADS,
for crying out
loud!"

Appendix A:

Journey Schools Program Application Packet

Arizona Mathematics and Science Academy and Institutes for Journey Schools

A Two-Year Professional Development Program for Elementary, Middle/Junior High, and Secondary Schools

May 5, 1994 - May 3, 1996

66

ARIZONA DEPARTMENT OF EDUCATION
C. Diane Bishop, Superintendent of Public Instruction

The **Arizona Mathematics and Science Academy and Institutes for Journey Schools** is a two-year professional development experience for elementary, middle, or secondary school teams. The purpose of the program is to build the leadership capacity of school/community teams and establish a network of professionals to support teams as they bring about systemic change in mathematics and science teaching, learning, and assessment.

WHAT IS A "JOURNEY SCHOOL?"

A Journey School is a school committed to systemically changing its mathematics and science education programs, so that all students may be successful. A Journey School has a team consisting of a principal, teachers, parents, and community members committed to reforming mathematics and science education. The team will be involved in the planning, implementation and evaluation of the science and mathematics program.

WHAT ARE THE GOALS OF THE ACADEMY AND INSTITUTE PROGRAMS?

The goals of the program are:

- develop a clear understanding of effective mathematics and science education;
- build the leadership capacity of school teams to systemically reform mathematics and science education programs;
- create a human resource network of support among school teams and science and mathematics educational leaders;
- develop an understanding of how the change process affects the implementation of reform efforts; and
- apply the use of systemic tools to planning, monitoring and evaluating the change process.

WHO MAY APPLY TO FORM A "JOURNEY SCHOOL?"

A team from an individual elementary, middle, junior high or high school may apply. The professional development series for "Journey Schools" will foster the building of the leadership capacity of the local teams composed of educators and members from the community. Each team should be comprised of at least: (1) a principal, science coordinator, or director of curriculum and instruction; (2) two experienced classroom teachers who have demonstrated leadership in his or her school/school district; (3) a parent, school board member, or community member; (4) a business and industry member, university or community college members. Teams of less-than five will be considered from rural schools, provided all groups are represented. For instance, a parent may also be a business person. A maximum of seven people may be on a team.

WHAT WILL BE THE FOCUS OF THE ARIZONA MATHEMATICS AND SCIENCE ACADEMY AND INSTITUTES FOR JOURNEY SCHOOLS PROGRAM?

The Journey Schools Program will focus on four major questions:

- **What is effective mathematics and science education?**
- **How do people and institutions respond to change?**
- **What are the tools that can be used to bring about systemic change?**
- **How can change be sustained through a network of support?**

WHAT IS THE ACADEMY AND INSTITUTE SCHEDULE?

Each Journey School will participate in a series of designed professional development experiences. The professional development experiences are

Journey School Orientation- A one-day orientation to the Journey Program, May 5, 1994, Phoenix Area or Regional Sites
Mathematics and Science Academy—A one week professional development experience, July 31-August 5, 1994, University of Arizona, Tucson
Fall Focus Institute-A three-day institute focusing on use of systemic tools for creating and monitoring change, October 12, 13, and 14, 1994, Phoenix Area
Winter Focus Institute- A two-day institute focusing on networking and planning next steps, February 9-10, 1995, Phoenix Area
Spring Technical Assistance On-Site Visits—Spring 1995
Summer Professional Development Options—School Choice During 1995 Summer
Fall Focus Institute-A two-day institute focusing on science and mathematics assessment systems, Phoenix Area
Spring Technical Assistance On-Site Visits—Spring 1996
Spring Commencement of "Journey Schools"—May 3, 1996

MUTUAL COMMITMENT

We believe that a collaborative effort between ADE and the schools can make the Arizona Mathematics and Science Academy and Institutes a success. Toward this end, we ask you to join us in making a mutual commitment. The priority is to provide schools with professional development experiences and a support network to create success for all students in mathematics and science.

ARIZONA DEPARTMENT OF EDUCATION COMMITMENT

The Arizona Department of Education is dedicated to developing a community of practice and support among Journey Schools in which teams form a community and support for each others' mathematics and science programs.

The "Journey Schools" Program will provide:

- Professional development opportunities for "Journey Schools."
- Coordination of funding to provide additional resources to Journey Schools.
- The support of a network of regional and state leaders of mathematics and science.
- On-site technical assistance visits from leaders of mathematics and science.
- Participation and Piloting for "Enhancing State Mathematics and Science Curriculum Frameworks—A Professional Guide for Systemic Reform."
- An option to participate as pilot test sites for state science ASAP assessments.
- An option to participate in ADE professional development activities for assessment.
- Access to Internet/PSInet and free telecommunications software for computer.
- A resource box of science and mathematics educational references.
- A limited number of "matching grants," up to $2,000, to be matched by local funds for the purchase of instructional materials and professional development training.
- Substitute costs during the school year for Institute activities.

School Commitment:

- Full participation of team in all academy programs and institute activities
- $300 per team member towards housing and meal costs of Academy Week.
- Have a computer, modem and phone line available for team and students.
- Design and implement school systemic plans.
- Document progress in a "Journey School" portfolio
- Spend 1-2 hours a week actively participating in conferences on Internet/PSInet.
- Expand the vision of the school team throughout the whole school.

WHAT IS THE COST TO SCHOOLS TO PARTICIPATE IN THE ARIZONA MATHEMATICS AND SCIENCE ACADEMY AND INSTITUTES FOR JOURNEY SCHOOLS?

The registration fee to form a Journey School is $300 per team member for the two-year period. Additional participation costs to schools include transportation to program activities and lodging. Upon acceptance as a Journey School, a check payable to the Arizona Department of Education (ADE) or a purchase order, must be received no later than May 13, 1994. Title II, Dwight D. Eisenhower Mathematics and Science Education Act funds are an appropriate funding source for this program. No cancellations will be accepted after April 29, 1994. Failure to notify ADE will result in a full charge.

HOW DO SCHOOLS APPLY?

Participation in the program is by application. Selection of teams for the program will be based upon the applicant's capacity to follow through on program commitments. You and your school can apply to form a Journey School by

- filling out the application form with the principal's signature
- gathering together a team of at least five people from your school and community
- submitting the application by April 20, 1994

Submit applications forms and to: Michael Lang or Linda Jaslow, ADE, 1535 W. Jefferson, Phoenix, AZ 85007 no later than April 20, 1994. Schools will be notified of their acceptance by April 22, 1994.

ADE
Printed in Phoenix, AZ by the Arizona Department of Education. Copies : 4000, Total Printing Cost $1216, Unit Cost $.30, Date: 2/94

Arizona Department of Education
1535 West Jefferson
Phoenix, AZ 85007

A Strategy for Change

An Opportunity For Your School
Arizona Mathematics and Science Academy and Institutes

ARIZONA MATHEMATICS AND SCIENCE ACADEMY AND INSTITUTES FOR JOURNEY SCHOOLS APPLICATION

To apply for participation in the professional development program for mathematics and science, please complete the application. For more information you may contact Michael Lang or Linda Jaslow at 542-3537.

DEADLINE TO APPLY: April 20, 1994

Mail or fax to:
Science/Mathematics Journey Schools Program
Arizona Department of Education
1535 W. Jefferson
Phoenix, AZ 85007
Fax: 602-542-3620

Principal_____

School_____

School address_____

City/State/Zip_____

School phone_____

Home address_____

City/State/Zip_____

Home phone_____

Where do you prefer to receive mail during school year? ☐Home ☐School

Grade Level ☐High School ☐Middle School/Jr. High ☐Elementary

School Location ☐Urban ☐ Suburban ☐Rural

Kind of School (please check one) ☐ Public ☐ Private

Number of students in my school_____

School Commitment:

As an Academy and Institute participant I will to the best of my ability, fulfill the program's requirements.

Principal's Signature_____ **Date**_____

Type of hardware that will be used for Internet/PSInet:

☐ **DOS** ☐ **MAC**

☐ **3.5" Disk** ☐ **5.25 " Disk**

List the members of your team, their professional title, and contact information below:

Member 1_____

Home address_____

City/State/Zip_____

Home phone_____

Work phone_____

Member 2_____

Home address_____

City/State/Zip_____

Home phone_____

Work phone_____

Member 3_____

Home address_____

City/State/Zip_____

Home phone_____

Work phone_____

(Continued On Back of Page)

List the members of your team, their professional title, and contact information below:

Member 4_____

Home address_____

City/State/Zip_____

Home phone_____

Work phone_____

Member 5_____

Home address_____

City/State/Zip_____

Home phone_____

Work phone_____

Member 6_____

Home address_____

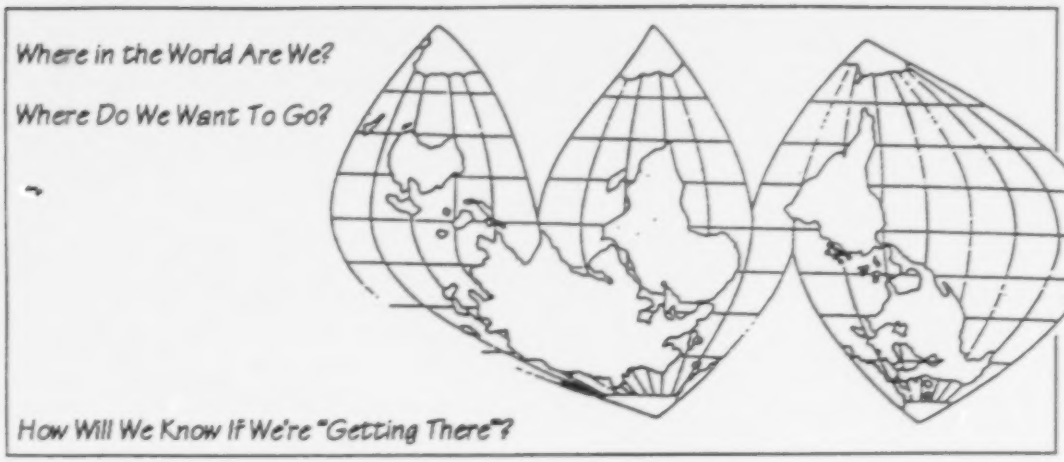
City/State/Zip_____

Home phone_____

Work phone_____

Appendix B:

Journey Schools Program Team Portfolio



The Journey School Team Portfolio

First Steps

Orientation May 5, 1994

This orientation session and the materials provided are focused on building a Journey School Team Portfolio. To help accomplish our objectives, we have formulated three primary goals for this session.

GOALS:

- ◊ To understand the purposes of a Journey School Team Portfolio
- ◊ To discuss issues involved with developing a team portfolio
- ◊ To clarify the structure and major components of a team portfolio

Throughout the session, keep track of questions you have and be sure that these are given to the session facilitator. If we do not have time to address all questions today, we will make every effort to do so through follow–up reports, future sessions, memos, or even electronically once we get bulletin boards and communication links established! Also, as you review these materials and begin work on your portfolio, questions will arise. Please feel free to ask your home base leaders and other faculty staff. If information is unclear to you, chances are others are also struggling with it. Please ask, so that we can help clarify and re–direct, if necessary, our course.

Structuring a Team Portfolio—Issues and Responsibilities

Chances are most of us have heard of student portfolios; many of us may be using them in our classrooms or have children who are keeping them for school. Some of us may even be keeping our own teacher portfolios or other personal portfolios of our work. Few of us, however, have likely been involved with creating a team portfolio. Today, we're breaking new ground as we develop and build the structures for our JSTPs (Journey School Team Portfolios).

We will use what we know about how student portfolios are developed to guide us as we consider the issues and responsibilities of building a team portfolio. Many of the thoughts and ideas presented in this handout follow the course charted by Judy Arter and Vicki Spandel for creating student portfolios. You may read and refer to their handout "Using Portfolios of Student Work in Instruction and Assessment" throughout this session as well as in the future to learn more about using student portfolios in school and to see how this parallels the development of our own team portfolios.

Issue 1: Design Responsibilities

Designing a team portfolio is both a "collaborative" and "iterative" process. People at Far West Laboratory and the Department of Education began with ideas for a prototype, based on our understandings of designing student portfolios. These ideas were then discussed and critiqued by Journey School Program faculty and staff to create today's revised version of a team portfolio. We consider this portfolio to be "evolutionary" in that design decisions will be on–going, in order to best "capture the culture" of each team. Our goal is to build team ownership of the JSTP.

Issue 2: Purposes

As team portfolios evolve, we see them revolving around these central purposes:

- ◊ Supporting the goals of the Journey School Program
  - To help JSP faculty members mentor and guide teams
- ◊ Supporting the goals of the Journey School Teams
  - To document each team's nurturing and maintenance of their own vision/goals
- ◊ Communicating accomplishments and achievements
  - To inform all interested parties—within and beyond the Journey School Program
- ◊ Evaluating the Journey School Program
  - To provide accountability information to funding sources

Issue 3: Link to the Journey School Program

The Journey School Program has five major goals for supporting teams along their journey of systemic reform, involving: (1) understanding effective mathematics and science education; (2) building leadership capacity; (3) creating support networks; (4) understanding the change process and reform efforts; and (5) applying systemic tools to plan, monitor, and evaluate change. Each Journey School Team will develop and work towards its own personal vision which may be built around the JSP goals as these relate to the team's individual situation.

Through the Journey School Program, teams are provided with a series of professional development experiences designed to emphasize the major goals and build on previous experiences. The information and ideas generated will have direct application and implications as you document your journey toward your team's vision and goals.

The Academy and Institute schedule outlined in the JSP brochure shows which major topics and activities will be featured at each scheduled meeting. And remember, you will have on–going contact with JSP faculty, staff, and your home base leaders throughout this journey in systemic reform. Over time, you will have many opportunities to complete portfolio entries that show how you are meeting your goals.

Journey School Program Focused Professional Development Experiences

JSP GOALS	May 5 Orientation	Summer '94 Academy	Fall '94 Institute	Winter '95 Institute	Spring '95 Site Visit	Summer '95 Professional Development	Fall '95 Institute	Spring '96 Site Visit
Effective math and science		✗	➡	➡	✔	✗	➡	✔
Leadership		➡	➡	✔	➡	✗	➡	➡
Human resource network	➡	➡	➡	✗	✔	➡	➡	✔
Change process		➡	✗	✔	➡	➡	✔	➡
Systemic tools	➡	➡	✗	✔	➡	➡	➡	➡

✗ Major emphasis ✔ Checkpoint/focus ➡ Introduction/support

By documenting team journeys and promoting reflection and communication (two essential elements of effective systemic change), the JSTP is designed to help each team and the entire JSP reach their respective goals. The Journey School Program and the team portfolios are highly interdependent; they should fit together naturally.

Issue 4: Content

Decisions are made over time as to what specific content actually becomes a part of the portfolio. Because we will be reviewing the portfolios periodically, it is important to understand the nature of "updating" the contents and portfolio entries. For our purposes, rather than "take out the old, and bring in the new," we interpret "updating" as meaning ***adding to*** material already present, not ***deleting*** information. Retaining earlier versions or information is important for faithful "capturing" of the change process so that we can better learn along the way.

Typically, portfolios begin with a table of contents—sometimes annotated—providing reviewers with highlights of what is to come. The table of contents should reflect the most current updates of the portfolio entries.

We envision three major sections of team portfolios that will include: (A) "contextual" information about your team, site, and vision; (B) documentation showing your team's journey as you reach for your goals; and (C) cumulative reflections summarizing where you are, how you are doing, and what steps you'll be taking next.

A. Contextual Information—"Where Are We Beginning?"

To create an accurate picture of your Journey School Team, your portfolio should include a series of "profiles" describing your particular circumstances and setting, and your "vision" and goals. This information provides the backdrop against which your journey will be understood. As you progress on your journey, this information can be updated.

- **Participant profiles**
  Who are the individuals embarking upon this journey?
  With individual profiles, each team member shares the formal and informal experiences that have shaped his or her knowledge, skills, and dispositions as someone concerned with education.

  Here you will describe yourself as an individual and as a team member. In addition to your name and "title" or position, tell about your experiences with education. Tell why you became involved in the Journey School Program. What are your expectations? What do you hope to gain from participating in this program?

  Pictures as well as words portray important aspects of teams and individuals. As you update your profile, you may wish to include information from your individual journal.

- **Site profile**
  What features set the stage for this journey?
  Knowing about your site's teaching and learning environment and "climate" helps others understand the context in which education occurs for your students.

In this profile, your team will create the "picture" of your school or district that your team represents as it is now. Include information about student demographics; math programs and science programs, and programs that make your site unique. You may describe teaching responsibilities as well as classroom settings.

You may wish to include other documents, such as copies of a school newsletter, teaching schedules, drawings, diagrams or photographs. This profile should also include your District Assessment Plan.

◊ **Community profile**
What is the "lay of the land" surrounding this site?
Teaching and learning always take place in a broad setting. For this profile, consider "community" to be both the geographic area and the population served by your school or district.

Create this profile to provide information about the community your team represents. Tell about your geographic location. Would you describe your community as working–, lower–, middle– or upper–class? or a mixture? What opportunities exist in higher education for your students? for adults? Which businesses and industries serve your area? How do the demographics of your community mirror those of the school?

In addition to written descriptions, you may find newspaper articles or photographs to portray important aspects of your community setting.

◊ **Vision statement**
Where might this journey be headed?
During the summer Academy, your team will be creating a vision for systemic reform. This vision is dynamic—it will evolve and change over time. It is important to keep your vision in mind as you create your goals, as you plan and take the steps to reach those goals, and as you assess your learning and progress along the way.

B. Journey Documentation—"How Are We Getting There?"

This part of your portfolio provides documentation that your team has reached or is moving towards your team goals as well as the JSP goals. Initial entries in this section provide baseline data describing where your team is beginning its journey in relation to its vision. A useful framework may be to organize evidence around the JSP's five goals; however, teams should feel free to move beyond this structure.

Although your team could create a separate entry for each goal, you may prefer to document how entries represent multiple goals. Also, "assignments" from JSP Academy and Institute experiences will be designed to be included as entries in the portfolio. These will provide direction to help you decide what documentation you should gather.

Guidelines for Documenting Your Journey

The type of documentation your team chooses depends to a great extent on the variety of learning and progress you wish to demonstrate, and on your own creativity. We encourage you to consider media beyond printed text as you gather representative "snapshots" depicting your journey. For each portfolio entry:

- ◊ Be sure to provide a clear picture of events, activities, processes, etc., connecting the entry to your goals, so that someone who was not present can understand what occurred and can appreciate the learning that is taking place.
- ◊ Include a reflective summary, telling of the challenges your team faced and how you met those challenges; describing your resources; and reflecting on how the activity or situation provides benefits for students, team members, your site, the JSP, and so on.

Keep in mind that your portfolios are evolving. As a team, begin early to nurture the habit of collecting evidence or "artifacts" for most every activity or event that might document your journey. It will then become easier—almost automatic—to create, revise, and update your entries, with reflections telling the story of your progress.

C. Cumulative Reflections—"Where Are We Now?"

Your team will periodically revisit its "vision." This section of your portfolio will house these "checkpoint summaries" in which you reflect on your goals; revise your vision; report on your successes, lessons learned, and accomplishments; and outline your next steps.

In these pieces, individuals may share personal stories or anecdotes of their travels as participants in the Journey School Program. This is an opportunity for assessing your progress and redirecting your efforts, if necessary. Teams should plan to share their cumulative reflections with other teams and JSP staff, such as at the beginning of Institutes and during site visits.

Issue 5: Assessment

Assessment should support our growth and learning, as well as measure it. If portfolios are to house the evidence of progress on this journey of systemic reform, then there must be some way to assess that progress and evaluate whether or not the Journey School Program is meeting its goals.

The three main sections of the portfolio are designed to capture these three questions: "Where did we begin?" (contextual information); "How are we getting there?" (journey documentation); and "Where are we now?" (cumulative reflections). The basis of our evaluation will be a comparison of "where we are now" to "where we were then" with considerations for "how we got here." Thus, the baseline data are quite important. Equally essential,

however, are knowledge of the goals we are trying to attain—goals give direction to our journey and help us know how far we have come—and the processes we used to reach those goals.

As a program, JSP will look to the team portfolios as a partial assessment of how effective the Academy and Institutes are, and to help determine how the JSP can improve. Portfolios should show evidence of progress or growth directly linked to the five JSP goals, in these three dimensions:

- **Team Participation** (such as attendance, use of Internet, sharing, etc., within and beyond JSP required or recommended activities)
- **Team Learning** (such as growth as leaders or effective users of math and science programs; or in lessons learned evidenced by reflective pieces in the portfolios)
- **Student Success** (such as pre/post attitudinal surveys, or samples of student work)

In appraising the information in the Journey School Team Portfolios, we may wish to rate ourselves (as individuals, teams, or the JSP) with a four-level rubric, such as: "Beyond There," "There," "Getting There," and "Not Even Close." Regardless of the rating scale, what's important is how we use the results—to help inform us of where we are, where we want to be, and what we might do to get there. Especially when a rating is "Not Even Close," we can look for the "why"s and work on the "how"s so that, at the next checkpoint, we're a bit farther along on our journey toward "Getting There."

In addition, self-assessment can be used as informal evaluation: Participants self-assess individually in their journals; and Journey School sites report their progress in their cumulative reflections. Site visits and periodic meetings with home base leaders and other faculty staff can corroborate both informal and formal assessment results.

Issue 6: Management/Logistics

As mentioned before, you should be collecting evidence that documents your growth and learnings early and often. A working folder (or file cabinet!) to store information for potential portfolio entries will become a "must."

Another "must" is determining an **Editor** who can be the key contact person for storing artifacts, tracking what types of evidence you have and what you might need, and working with the team to select entries and develop them into accurate "pictures" of your journey. Because this is ***everyone's*** team portfolio—not just the editor's responsibility—individuals will take on assignments as well as work in teams with their editors to be sure portfolio components are complete. The editor will have on-going communication with the JSP faculty and staff to help decide if entries meet the purposes and criteria for the portfolio.

Because the team portfolios serve dual purposes for the Arizona Department of Education and the Journey School teams, there will eventually be two separate portfolios—one for the site and one for the ADE. The ADE version must be "public domain"—usable for public relations and available to all interested parties who wish to review the progress of the Journey School Program. Also, certain components and portfolio entries may be stored on the Internet and PSInet systems as teams communicate with one another and the JSP faculty staff; or information from portfolios may be used as the basis for research by others interested in developing team portfolios or establishing Journey School Programs of their own.

For reasons of anonymity and confidentiality, teams may wish to edit certain entries in their ADE portfolios to "block out" specific names of teachers, students, perhaps even information about the specific site. However, there must remain enough contextual information for outside observers to understand the community and the team progress being documented. Because portfolios can be powerful PR, teams may wish to include additional entries or information in their site portfolios that is not needed by the ADE or the Journey School Program evaluators.

Issue 7: Staff Development

Developing a team portfolio is an on-going process and should be integral to team efforts to reach your goals. In order to support your efforts in documenting progress, the Journey School faculty and staff will design Academy and Institute activities that will provide training opportunities for ***all*** team members to prepare and implement portfolios. There may be special sessions for editors as well.

It is important that teams and individual members let JSP staff know early on when difficulties or misunderstandings arise. Although teams have flexibility in deciding upon and developing the portfolio pieces, you may request additional support from JSP staff to ensure that the structure within and among the major portfolio components is maintained.

Answering Questions and Questioning Answers

Although clarifying questions may have been addressed during the previous "Issues and Responsibilities" portion of the session, additional questions may have arisen. Take a few moments to formalize your own most "burning" questions or issues for discussion. Write your questions on transparencies or index cards and pass them to the session leader to be posted and addressed, as time permits.

Because there may be time only for two or three questions, and then with only limited discussion, not all questions may be satisfactorily answered or even asked. If we have all the questions in writing, we can address them in

other ways prior to or at the Academy (e.g., on Internet, with surveys, memos, follow–up report).

Documenting the Journey

Although many questions and issues may be unresolved, team members need time to discuss how to go about collecting and documenting evidence in an on–going and as un–burdensome way as possible. In small groups you can brainstorm as many different forms of evidence or "artifacts" and ways to document a journey as possible.

Consider this as "BRAINS STORMING" time. No judgments or discussions are allowed during brainstorming sessions. Teams can spend time later deciding what types of documentation best fit their purposes. This is a chance to be creative and expand your thinking horizons.

Ideas presented during this session will be written up and combined with the ideas generated by the other home base teams. These may then be summarized and sent to the teams in a follow–up report.

Building Our First Portfolio Entry

Read through the "Assignment" handout outlining the requirements for the three Contextual Information profiles of the portfolio (individual, site, and community). Meet with your team to plan how you will approach this assignment. We will review these profiles during the Academy this summer, and would like them to be as complete as possible *before* you arrive.

In closing...

Building a portfolio is an on–going process. Work with your team to keep the process going on.

GOOD LUCK
and
KEEP IN TOUCH!

This document was prepared for the Arizona Department of Education's Journey School Program by staff of the Far West Eisenhower Regional Consortium for Mathematics and Science Education. It contains information related to the primary topics presented during the Team Portfolio session at the Journey School Program Orientation May 5, 1994. It is presently in *DRAFT* form, and, like many roads, is under construction. If you are a member of a Journey School Team, you have the opportunity to set and change the direction these team portfolios may take. Please, let us know what you think *throughout* this process. What seems like a good path to follow as we begin a journey may lead to roadblocks, dead ends, and, at a minimum, a variety of detours along the way. Help guide the traffic. Keep us informed.

Appendix C:

Journey Schools Program Evaluation Instruments

ARIZONA JOURNEY SCHOOLS PROGRAM
SAMPLE EVALUATION FORM

Arizona Mathematics and Science Academy and Institutes for Journey Schools
University of Arizona
Tucson, AZ
31 July - 5 August 1994

Please evaluate the summer Academy by answering the following questions. Feel free to write any additional comments or continue answers on the back side of this paper. Please return this form to your Home Base Leader. Thank you.

1. In what ways were the week's activities helpful to your team (did they meet your team's needs, expectations, etc.)?

2. How could these activities have been (more) helpful to your team?

3. How will you use the materials and/or information from the Academy as you work with your team to bring about systemic change in the math/science curriculum in your district?

4. Are there any unresolved issues?

JSP FINAL REPORT
SITE VISIT INTERVIEW PROTOCOLS

SITE VISIT PROTOCOL: JSP TEACHER

1. What effect has your involvement with the JSP had on you and your students? [probe: curriculum, teaching strategies, assessment techniques]
2. How is this different from what you did before?
3. Do you feel better able to provide a quality math/science program to your students?
4. Have these improvements affected all students?
5. What effect has your involvement with the JSP had on your school?*
6. How is this different from what you did before?*
7. Please recommend a group of several students that I can meet with to discuss their experiences.

* ask these questions as time allows

SITE VISIT PROTOCOL: NON-JSP TEACHER

1. Are you aware of the Journey Schools Program at your school?
2. Have you participated in any JSP-sponsored activities?
3. Has your school's participation in the JSP affected you or your students in any way? [probe: Teacher's teaching and professional development, student learning]

SITE VISIT PROTOCOL: STUDENTS [adapt wording by grade level as needed]

1. Tell me about your math/science class this year.
2. What sorts of things have you done?
   what sorts of activities, assignments, quizzes, tests...
3. What have you really liked?
4. What haven't you liked?
5. How does this compare to other math/science classes you've had?

SITE VISIT PROTOCOL: TEAM

1. What effect has your involvement with the JSP had on your school and district?
   (probe: collaboration, networking, leadership capacity, school-wide reform, community/parental involvement, teacher preparation, systemic)
   WHY? (in each case, ask them to give examples)
2. How is this different from how things were before?
3. How has involvement with the JSP affected your school's ability to provide a quality math/science program to its students?
4. Have these improvements affected all students?

Closure:

Depending on how the discussion has gone, ask those present to sum up why things did or didn't work at their site (e.g., name top 3 reasons why the changes you've mentioned took place).

Activity 14—Organizational Support for Science and Mathematics Education

Using The Interview Design Process

Step 1. Introduction and Overview of Activity 14 (2 minutes)

Share the desired outcomes of the activity *(overhead)*
To identify the kinds of support that have helped our teams to improve their science and mathematics programs)
and the reasons for using the interview design process *(overhead)*
To generate and analyze information on a number of questions at once; and To balance and increase participation in identifying information, analyzing, and reporting conclusions)

Describe the process:

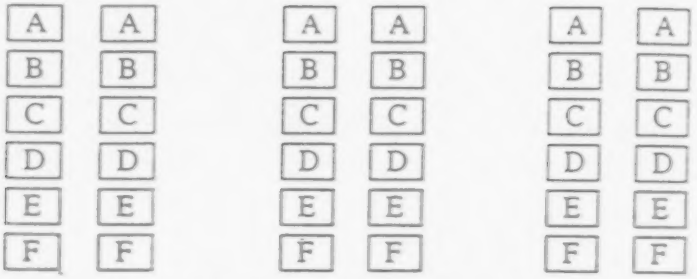
Seated in pairs of rows, facing one another, (or in concentric circles) each person receives one of 6 interview questionnaires (A, B, C, D, E, or F). Then, taking turns and "knee–to–knee" each asks the person across from him/her an interview question and writes down that person's response. Participants in every other row (or in outer circle) shift one chair to the left and we repeat the interviewing process (i.e., in turn, each asks the other her/his question and writes the responses on the questionnaire) until each person has answered five questions (and has asked his/her question 5 times). At this point we break into 6 "Questionnaire Groups" in which everyone who was asking the same question meets together and summarizes the responses. Each Questionnaire Group prepares and presents a report to the whole group.

Explain that this activity is adapted from an activity in the Systemic Change Toolkit their team will be receiving later in its "Goodie Box." Share the features of the Interview Design Process: *(overhead)*
Active involvement, Anonymity, Candor, Informality, Objectivity, Involvement in analysis, and Exposure to ideas.

Step 2. Seating and Rotation Arrangements (3 minutes)

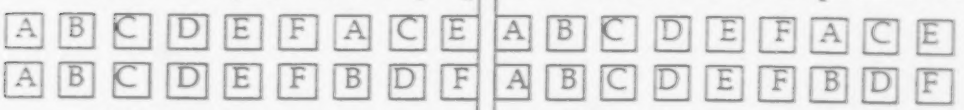
Have participants seated in chairs arranged in an even number of rows, with pairs of rows "facing" each other "knee–to–knee"—row 1 "faces" row 2; row 3 "faces" row 4; and so on (or in two concentric circles). For example, with 36 participants, it would be best to have 6 rows of 6; or 2 rows of 18; or 2 rows of 12 and 2 rows of 6; then people facing one another would begin with the same questionnaires.

Example: 6 rows of 6



Examples: 2 rows of 18; or 2 rows of 12 and 2 rows of 6

With 4 rows of 9, however, the 6 questions would be distributed slightly differently (and some people will answer the same question twice):



"Ideally" each person answers a different question at each interview "station." However, if the number of people in the group is not a multiple of 6 (because there are 6 questions), the facilitator will need to do some special arrangements. If there is an odd number of people, the facilitator may also participate in the process.

Distribute questionnaires "in order"(A, B, C, D, E, F, A, B, C, D, E, F...) so that "opposites" begin with the same question, and people sitting next to one another do not have the same question. In this way, people will be able to respond to all questions and will not be asked the same question twice (ideally).

To save time, once participants are lined up, do ***not*** have them ask their question of the person presently sitting across from them (who –ideally– has the same question). Instead, practice the first "rotation" by saying "Pretend you just interviewed the person across from you. Then that person interviewed you. Now, rotate." Check that the appropriate rows/people move to their new "stations"—across from a new person with (ideally) a new question.

Step 3. Paired Interviews **(25 minutes)**

Have participants read through the directions at the top of their interview questionnaires. They will be interviewing five people and recording those responses on that questionnaire sheet. They may need to use the back side or attach extra paper. Tell participants *we will be collecting these forms*, so please write legibly and remember to return them at the end of the activity.

Each person will have about 2 minutes to interview the person across from him/her. Have one row begin, each asking her/his question (and recording the partner's response) and then switch roles so that the other

partner is doing the interviewing. (After 2 minutes, announce that it is time for the second person to ask his/her interview question.)

Call "time" after 5 minutes and have each participant in every other row move one seat to the left (person at "left-most" end moves to other end) (or, if in concentric circles, outer circle moves) so that each person is facing a new partner with a new question (although they will be asking the same question as before, they will–ideally–be responding to a new question).

Repeat the interview process until each has interviewed five others.

Step 4. Questionnaire Groups—Analyze & Synthesize **(20 minutes)**

After the final interview session is completed, have participants move into six Questionnaire Groups so that all people who *asked* the same question meet together. During this meeting groups should review and compare the responses they received and then prepare a report of their analysis to share in a whole group presentation. They should use chart paper and markers to take notes and organize their responses.

Record Ideas: In turn, each participant contributes one of the responses. Encourage "hitchhiking" on ideas; discourage discussion or justification.

Clarify: Read item 1 aloud and invite clarifying comments. Continue for items 2, 3, ... until the list is covered.

Categorize: Identify and combine duplicate items. Cluster by themes or key concepts. Rewrite items as needed to synthesize responses.

Step 6. Report **(15 minutes)**

Each group briefly shares its synthesis (2 minutes per group). As time permits, questions and a whole group discussion can follow the report session.

Be sure to *COLLECT ALL INTERVIEW QUESTIONNAIRES* as well as groups' notes and the final reports, including chart papers. These will be combined with other groups' responses as part of our final Evaluation of the Journey Schools Program.

Interview Questions A–K

Note: Each home base answers six questions from the eleven Evaluation questions.

Directions: Using the question below, interview the person across from you. Record the responses in the space under the question and on the back of the page. You will have 2 minutes to conduct each interview. You will be interviewing five individuals in the line facing you. Record each individual's responses even if they are the same as someone else's. Record each respondent's ideas, not your interpretation. Reread the question to a given respondent as needed.

Question A: Do you feel your team has a clear shared vision? Why or why not?

Question B: Do you feel that you can make knowledgeable decisions about effective science and math programs? Why or why not?

Question C: Is there community/parental support and involvement for mathematics and science education programs? Has it increased/decreased/stayed the same over the past two years? In what ways, if any, did the Journey Schools Program play a part?

Question D: As a result of your involvement with the Journey Schools Program, do you feel part of a network for supporting math/science change in schools? Who are the members of this network?

Question E: Has your *team* made progress in providing access and support for all students to quality math/science instructional materials? Explain.

Question F: Has the Journey Schools Program enhanced your school's and teachers' knowledge and skills in providing quality math/science instruction to all students? Explain.

Question G: How does the Journey Schools Program compare to other staff development activities (e.g., previous ADE academies,...) you've experienced or know about?

Question H: What changes have happened at your school as a result of your involvement with the Journey Schools Program?

Question I: In what ways have you used systems thinking tools* to monitor and evaluate changes going on at your school as you implement your vision? (*Systems thinking tools include such strategies as"Fast Break" and clustering, reinforcing and balancing feedback loops, "Fixes that Fail", charts and matrices,... from the Fall '94 Institute.)
(If interviewee does not use systems thinking tools or is not sure what they are, ask: How *do* you monitor and evaluate changes going on at your school as you implement your vision?)

Question J: Other than providing funding for the program, how has Arizona Department of Education involvement with the Journey Schools Program affected your team/district's implementation of systemic change?

Question K: Other than providing funding for the program, how has Far West Lab/WestEd involvement with the Journey Schools Program affected your team/district's implementation of systemic change?

Arizona Department of Education
Journey Schools Program

INDIVIDUAL EVALUATION FORM

PART I.
Please provide the following information:

1. Name 3 *things* that the Journey Schools Program has **done well**.

2. Name *1 thing* upon which the Journey Schools Program could **improve** and *how* it might do so (e.g., what support or resources might be needed).

3. Any other comments?

PART II.
Listed below is the entire set of questions from Activity 14. On the next page, please provide your *individual* response to any of the questions as you wish.
(Be sure to identify the question letter at the beginning of your response).

Question A: Do you feel your team has a clear shared vision? Why or why not?

Question B: Do you feel that you can make knowledgeable decisions about effective science and math programs? Why or why not?

Question C: In what ways, if any, did the Journey Schools Program play a part in building community and parental support and involvement for your math and science education programs? (e.g., Has it increased/decreased/stayed the same over the past two years?)

Question D: Do you feel that participating in the Journey Schools Program has made you part of a network among schools, colleges, universities and the Arizona Department of Education for supporting math/science change in schools? Explain.

Question E: Has your ***team*** made progress in providing access and support for all students to quality math/science instructional materials? Explain.

Question F: Has the Journey Schools Program enhanced your school's and teachers' knowledge and skills in providing quality math/science instruction to all students? Explain.

Question G: How does the Journey Schools Program compare to other staff development activities (e.g., previous ADE academies,...) you've experienced or know about?

Question H: What changes have happened at your school as a result of your involvement with the Journey Schools Program?

Question I: In what ways have you used systems thinking tools* to monitor and evaluate changes going on at your school as you implement your vision?
*Systems thinking tools include such strategies as "Fast Break" and clustering, reinforcing and balancing feedback loops, "Fixes that Fail", charts and matrices,... from the Fall '94 Institute.

Question J: How has Arizona Department of Education involvement with the Journey Schools Program affected your team/district's implementation of systemic change (other than providing funding for the program)?

Question K: How has Far West Lab/WestEd involvement with the Journey Schools Program affected your team/district's implementation of systemic change (other than providing funding for the program)?

Thank you for your responses!!!

Appendix D:

Journey Schools Program Teams and Staff Rosters

1996 JSP Teams Roster

Apache Middle School

3305 East Fry Boulevard
Sierra Vista, AZ 85635

Sierra Vista Unified School District #68
Contact: Bill Eddings 520.515.2920

Arrowhead Elementary School

7490 W. Union Hills Drive
Glendale, AZ 85308

Deer Valley Unified District
Contact: Richard Clawson 602.581.7926

Clarendon Elementary School

1225 West Clarendon
Phoenix, AZ 85013

Osborn School District #8
Contact: Del Merrill 602.234.2625

Coconino High School

2801 N. Izabel
Flagstaff, AZ 86004

Flagstaff Unified School District #1
Contact: Michele Corcoran 520.773.8200

Connolly Middle School

2002 East Concordia Drive
Tempe, AZ 85282

Tempe Elementary School District #3
Contact: Ron Izzett 602.967.8933

Desert View High School

4101 E. Valencia Road
Tucson, AZ 85706

Sunnyside Unified School District #12
Contact: Jo Quintenz 520.741.2467 x21

Esperanza Elementary School

2353 East Bantam Road
Tucson, AZ 85706

Sunnyside Unified School District #12
Contact: Josie Clark 520.741.2456

Granite Mountain Middle School

1800 Williamson Valley Road
Prescott, AZ 86301

Prescott Unified School District
Contact: Michael J. Harlan 520.717.3253

Hualapai Elementary School

350 Eastern Avenue
Kingman, AZ 86401

Kingman Elementary School District #4
Contact: Jack Wade 520.753.1919

Kyrene de la Colina Elementary School

13612 South 36th Street

Kyrene Elementary School District #28

Kyrene de la Mariposa Elementary School

50 East Knox Road
Tempe, AZ 85284

Kyrene Elementary School District #28
Contact: Darlene Pany 602.496.4810

Kyrene de las Lomas Elementary School

11820 South Warner Loop
Phoenix, AZ 85044

Kyrene Elementary School District #28
Contact: Patrick Yennie 602.496.4694

Kyrene del Cielo Elementary School

1350 North Lakeshore Drive
Chandler, AZ 85226

Kyrene Elementary School District #28
Contact: Bobbi Caley 602.496.4700

Kyrene Middle School

1050 East Carver Road
Tempe, AZ 85284

Kyrene Elementary School District #28
Contacts: Jo Devlin/Michelle Good 602.496.4666

Larkspur Elementary School

2430 East Larkspur Drive
Phoenix, AZ 85032

Paradise Valley Unified School District #69
Contact: Gail Fleming 602.493.6150

Lee Kornegay Junior High School

Hwy. 60–70 & South Ragus Road
Miami, AZ 85539

Miami Area Unified School District #40
Contact: Donetta Van Haren 520.425.9323

McKemy Middle School

2250 South College Avenue
Tempe, AZ 85282

Tempe Elementary School District #3
Contact: Meg Davis 602.921.9003

Palmdale Traditional School

3146 East Weir
Phoenix, AZ 85040

Roosevelt Elementary School District #66
Contact: Lisa Smith 602.232.4200

Pueblo Middle School

360 South Twelve Oaks Blvd.
Chandler, AZ 85224

Kyrene Elementary School District #28
Contract: Linda Kinnerup 602.496.4727

Red Mountain Ranch Elementary

6650 East Raftriver Road
Mesa, AZ 85215–9771

Mesa Unified School District #4
Contact: Jerry Edwards 602.854.1742

Rice Elementary School

San Carlos Avenue
P.O. Box 207
San Carlos, AZ 85550

San Carlos Unified School District #20
Contact: Cleoloa Berray
520.475.2315

Safford Unified Schools

734 11th Street
Safford, AZ 85546

Safford Unified School District #1
Contact: Paulette Le Blanc 520.428.2950 x3283

Sahuarita Elementary School

350 West Helmet Peak Road
Sahuarita, AZ 85629

Sahuarita Unified School District #30
Contact: Nancy J. Harrington 520.625.3529

Sahuarita High School

P.O. Box 26
Sahuarita, AZ 85629

Sahuarita Unified School District #30
Contact: Dave Holmer 520.648.1160

Sierra Middle School

5801 South Del Moral Blvd.
Tucson, AZ 85706

Sunnyside Unified School District #12
Contact: Susan Masek 520.741.2656

Sonoran Sky Elementary School

12990 North 75th Street
Scottsdale, AZ 85260

Paradise Valley Unified District #69
Contact: Tacy Ashby 602.493.6340

Sunnyside High School

1725 East Bilby Road
Tucson, AZ 85706

Sunnyside Unified School District #12
Contact: Charles Jerz 520.741.2400

Thew Elementary School

2130 East Howe Street
Tempe, AZ 85281

Tempe Elementary School District #3
Contact: Marsha Speicher 602.894.5574 x7039

Villa de Paz Elementary School

4940 North 103rd Avenue
Phoenix, AZ 85037

Pendergast School District #92
Contact: Jackie Costa 602.877.1855

Westwood Primary School

4711 N. 23rd Avenue
Phoenix, AZ 85015

Alhambra Elementary School District #68
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Virgil Prokopich

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Eloy, AZ 85231

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Roger Spratt

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Mesa, AZ 85210-1096

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fax: 602.890.7365
email: spratt@mesa.k12.az.us